THE OIL WEEKLY

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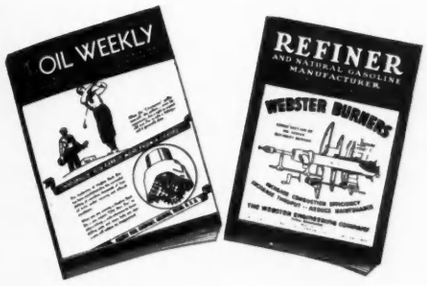

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The Oil Man's Calendar

FEB.	
15	A.P.I., East Texas Chapter, Kilgore, Texas.
14-18	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
17-18	Mid-Continent District, A.P.I., Division of Production, Amarillo, Tex.
MAR.	
15-17	Society of Exploration Geophysicists, New Orleans.
16-18	American Association of Petroleum Geologists, New Orleans.
21-25	Western Metal Congress, Biltmore Hotel, Los Angeles.
23-25	American Society of Mechanical Engineers, Los Angeles, Calif.
24-25	Southwestern District, A.P.I., Spring Meeting, Fort Worth, Texas.
APR.	
13-15	Petroleum Industry Electrical Association, Rice Hotel, Houston.
13-15	National Petroleum Association, Cleveland, Ohio.
14-15	A.P.I., Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.
19	A.P.I., Division of Production, Pacific Coast District, Spring Meeting, Biltmore Hotel, Los Angeles.
MAY	
6-12	American Gas Association, Natural Gas Department, New Orleans, La.
11-13	Natural Gasoline Association of America, Hotel Tulsa, Tulsa.
12-14	National Oil Scouts Association of America, Tulsa, Oklahoma.
14-21	International Petroleum Exposition, Tulsa, Oklahoma.
23-25	A.P.I., Mid-Year Meeting Wichita, Kansas.

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LOOKING AHEAD

WITH THE EDITOR

New Method for Determining if gas is sweet or sour . . .
What of Pennsylvania's future? . .

IN APPLYING proration to the gas fields of Texas, particularly the Panhandle district, it became necessary to determine a number of factors so that the gases might be classified as sour or sweet. Since this was a problem of the Texas Railroad Commission, engineers of that body commenced a study of the problem, the result of which has been the development of methods and equipment for the purpose. There have been a number of research works on this subject, but they did not carry the study as far as necessary for proration purposes. Consequently, the advancements achieved by the Texas Railroad Commission engineers is of value. An article describing the problem, the work, and the apparatus used by these men is to be described in an article written by them.

ONE OF the most important sectional problems before the industry at present is the situation in Pennsylvania. Recently crude prices have been reduced several times. Consequently, operators of the numerous stripper wells in the region find themselves confronted with the task of pinching operating costs if they are to stay in business. The situation has become so acute that the State is threatening to enact "strict control measures," and at the moment is conducting an investigation of the industry. Pennsylvania operators are wondering what the future holds for them, and this is the subject matter of a comprehensive article to appear soon. This study has developed many interesting angles, and we believe is the most authoritative discussion of the factors influencing Pennsylvania prices ever published.

The changing panorama

GASOLINE storage has reached a new all-time peak, giving warning that the industry probably will continue to have difficulties in its markets, growing out of excessive gasoline inventories.

The stocks of gasoline in the United States on January 29 totaled 84,844,000 barrels, having increased about 2,000,000 barrels within the week, and having gone above the previous all-time peak of about 83,000,000 barrels that was reached at the close of March, 1937.

The gasoline stocks now are 22 percent larger than one year ago, whereas the demand for gasoline has been running lately only about 10 percent above the levels of a year ago.

Strict Crude Control Advocated

Colonel Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and member of the Texas Railroad Commission, lately has been pointing to the excessive gasoline inventories as evidence also of excessive crude oil production. He has been asserting that the excess gasoline supplies actually represent excess crude oil in refined form.

The comments of the colonel in this connection obviously have been intended to promote exceptionally trict control of crude oil production in the next several months, not only in Texas but also in the other important producing states.

In describing the gasoline situation as alarming, the Texas official also apparently was endeavoring to build up among Texas oil producers a general willingness to submit, if necessary, to an extension of the 6-Sunday shut-down program for all wells in the state, now in effect.

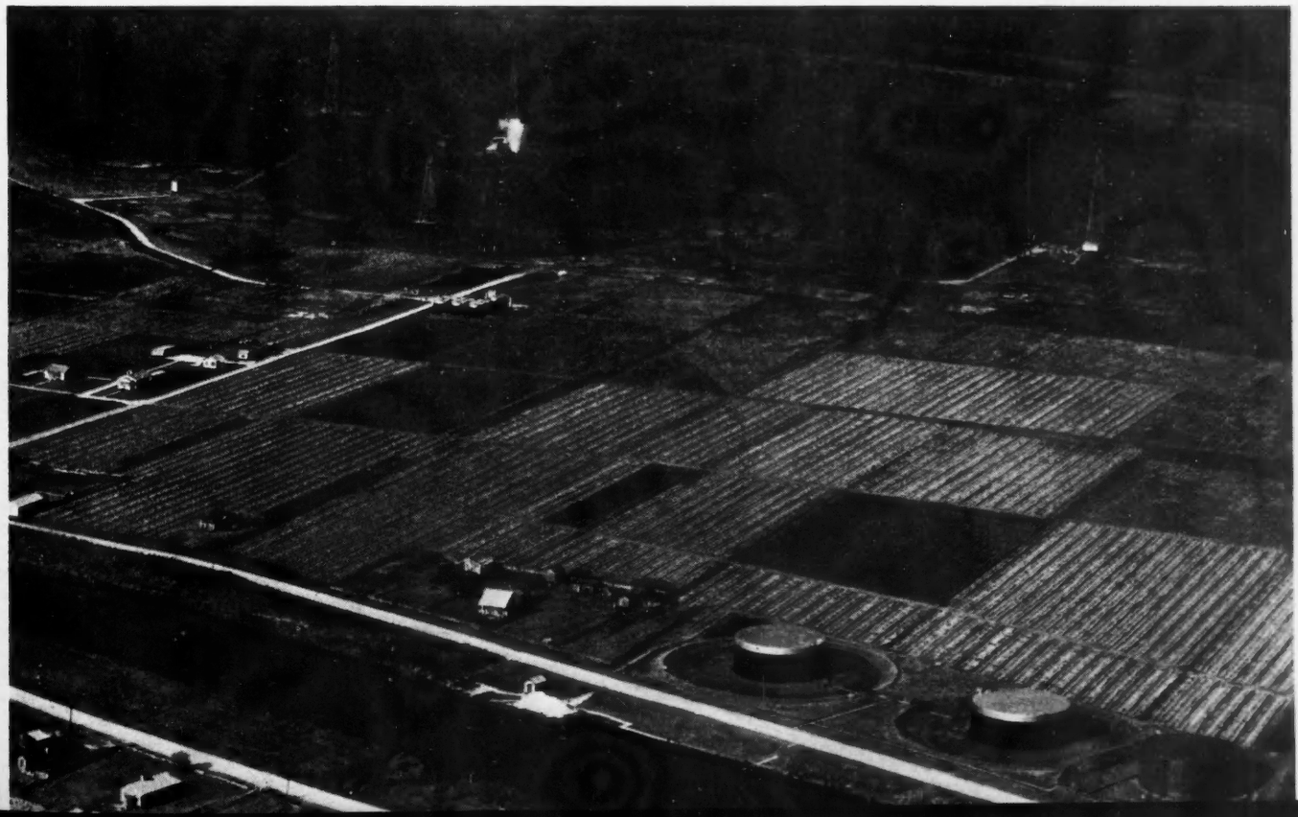
The question of whether or not to extend the shut-downs will come up at the next state-wide proration hearing, scheduled at Austin February 18.

Meanwhile, the crude oil production of the United States is being held down with unusual strictness. It has been running lately only about 5 percent higher than at this time last year, whereas petroleum demand has been showing a somewhat larger gain over a year ago.

The Sunday shut-downs in Texas are contributing greatly, of course, to the achievement of the favorable results for the nation as a whole. But other leading producing states also are cooperating advantageously.

Oklahoma's allowable of 535,000 barrels daily for February is substantially under the Bureau of Mines 569,700-barrel estimate of demand, and New Mexico's 105,000-barrel state allowable is 100 barrels under the indicated demand. Kansas adopted as its allowable the 176,400-barrel recommendation of the bureau, and Louisiana slightly exceeded its 239,400-barrel recommendation in fixing the state allowable at 244,700 barrels daily. The producers of California in their

The Valentine field, Lafourche Parish, South Louisiana, is completely and clearly portrayed in this fine airplane photograph. In the background are the producing and drilling rigs, while to the left center are the flow tanks. Production is then stored in the three large tanks pictured in the lower right hand corner, from which point it is shipped out by barges on Bayou Lafourche. The loading dock may be seen directly below the storage tanks. Dwellings shown in the extreme left central part of the picture is the camp of Pan American Production Company.



voluntary proration program set as their goal the restriction of crude output in February to 659,000 barrels daily, or substantially less than the indicated demand of 693,700 barrels, although the state regularly exceeds the limitations voluntarily adopted.

Purchasers Are Prorating

The special efforts to hold down crude oil production appear to be fully justified by existing market conditions. For although crude oil prices have been holding, there have been various signs of instability in the market situation. For example, Sinclair Prairie Crude Oil Purchasing Company last week announced it had reduced its crude oil purchases in Oklahoma to 90 percent of the allowable production, because of over-supplies of crude in that state as well as in Kansas.

The Sinclair Prairie company had previously reduced purchases in Kansas in January, after the Kansas Corporation Commission had increased allowable production; and in the Kansas action the company had been followed by Stanolind Crude Oil Purchasing Company, Phillips Petroleum Company, and Kanotex Refining Company. All these companies have extended their curtailed buying programs in Kansas into February, purchasing ratably from 70 to 90 percent of the allowed production.

New World Record in Deep Drilling

A new world's record in deep well drilling was established last week by Continental Oil Company in its wildcat, K. C. L. A-2, in the Wasco area, Kern County California.

Latest reports indicated that the operators were coring hard shale at 12,880 feet; that the hole might be drilled below 13,000 feet; and that there was hope of finding commercial oil production around the 13,000-foot level.

The test became the world's deepest when it passed the 12,786-foot level, breaking the record that had been held for nearly three years by Gulf Oil Corporation's McElroy 103, in the Gulf-McElroy field, Upton County, West Texas.

The setting of a new world's record in deep drilling makes especially timely a feature article on deep drilling appearing in this issue. The article was written several weeks ago, and the pages on which it appears already had been printed when the new record was established. This explains why the article does not embody information on the setting of the new record.

The article began with the double prediction that new records would be established in 1938 in both drilling depths and producing depths. Thus the half of the prediction involving the record drilling depth already has been fulfilled.

Drilling

MICHIGAN'S newest important wildcat strike is 10 miles from production and an almost impassable distance from roads, which means the pending rush of development will await better weather.

In North Louisiana, the Lisbon field was extended in two directions. In the adjacent area of Arkansas, three new wells at Schuler were completed, but two of them had so much salt water they had to be killed. Meanwhile, a wildcat between Buckner and Schuler was being watched.

Southwest Texas was busy, as usual. Vicksburg sand production was found in the Mirando Valley by a producer in central Starr County. A second sand was proved productive in the Weslaco pool. A new Pettus field was opened near Normanna in Bee County. The Ezzell field was defined to the southwest, while the Gravis sand at North Sweden was limited on the east side. A new Edwards limestone field may be in the offing in Caldwell County. Nueces County's newly discovered Turkey Creek field was extended 1500 feet east.

California now holds the world's deepest drilling record, a test in Kern County is going ahead below 12,880 feet.

K-M-A, with 80 rigs working, gives that North Texas spot the leadership over East Texas in activity. Meanwhile, K-M-A continues to spread.

Market briefs

Outlook—Markets have become steadier.

Crude Markets—Prices holding.

Refined Oil Markets — Gasoline prices now holding.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
January 29	3,357,650	3,170,000
Previous week	3,506,200	3,220,000
Year ago	3,194,050	2,995,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
January 22	304,424,000
Week before	303,679,000
Year ago	286,044,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
January 29	84,844,000	118,793,000
Week ago	82,785,000	118,433,000
Year ago	69,540,000	102,078,000

DRILLING

Period	Wells Completed
Past week	463
Previous week	462
Year ago	366
Year Total:	
This year	2,761
Last year	2,618

Technology

ONE of the richest oil producing areas in the world is the Texas Gulf Coast. In this small district are more than 15 percent of the known crude reserves of the United States. Its volume of discoveries continue to increase faster than production withdrawals. It is anticipated that this will be true in future years, for drilling activity in the territory is increasing. Details of crude reserve data and drilling activity in the Texas Gulf Coast is presented on page 17.

At present many seismic parties are using a shot hole and short-distance geophones to obtain additional data on the thickness of weathering layers. However, often the data so procured are not used to the best advantage because of the absence of systematic information pertaining to the shot and near shot-hole geophones. The value of such data, and how to obtain it, is discussed on page 14.

For several years there has been a distinct trend toward greater depths. The year 1937 was characterized by the drilling of more 10,000-foot holes than in all previous history. The record of all 10,000-foot drilling is presented on page 22, and becomes of greatest significance because of the establishment of a new world's record last week, which was after the article was in print.

Progress in engineering in exploration, drilling, producing and pipe lining marched forward in 1937, but even greater strides are expected in 1938. The developments in 1937 are set forth on page 32.

Proration Picture

Kansas cuts allowable 10,000 barrels . . . Thompson sees the need for further curtailment, and indicates Texas may be expected to continue to lead the way.

Kansas adopts Bureau figures for allowable

Allowable for Kansas in February has been set at 176,400 barrels daily by the State Corporation Commission. The figure matches the recommendation of the United States Bureau of Mines. It is 10,072 barrels lower than the allowable for January.

At the same time the Kansas commission raised the per-well allowable of 25 fields from 15 to 25 barrels daily. Increase in water was responsible for the raise, as the hearing which was started in October was to the effect that the 15 barrels per day was so low that it would result in abandonment of wells.

The fields to draw this increase are: Lorraine, Latta, Welch, Halstead, Raymond, Stoltenberg, Ritz, Greenwich, Ruder, Stratman, Voshell, Churchill (Kansas City lime), Eastborough, Edwards, Hollow Nickel, Oxford, Shutts, Burrton (Hunton lime) and Guldner.

Texas may make further curtailment

The Texas Railroad Commission has announced that the statewide hearing will be held in Austin on February 18. This will be the first hearing held after the promulgation of the order providing for six Sunday shut-downs of all Texas oil fields, and it is possible that grievances against this program will be presented.

This phase of the situation seemed of particular importance in view of the announcement by Commissioner Ernest O. Thompson last week to the effect that the curtailment program must be continued, possibly until the first of June.

Thompson pointed out that last year supply and demand were balanced about March 1, but at the turn of the year, there was not on hand such a voluminous supply of crude and finished products.

He was particularly pleased to find that Oklahoma, Louisiana, Kansas, and New Mexico had joined Texas in making some reduction. The fact that California is considering the enactment of proration statutes was also deemed important. Thompson pointed out that much of the oil from this area is going to Japan and that the voluntary proration system now in effect in that state might be endangered should an emergency arise.

He indicated that Texas would continue to lead in the curtailment, regardless of the activities in the other states, in an effort to preserve the market here, regardless of conditions elsewhere.

An investigation of gas/oil ratios of wells producing from the Dees-Young horizon in the Rodessa field will be made at the hearing. Commission officials believe that some of these ratios are too high.

The Commission also will consider evidence upon which to base rules for the shooting or perforating of wells in fields throughout Texas. It is possible that the Commission may require companies conducting these operations to secure a permit specifying the depth at which the well is to be shot.

Reports have reached the Commission that in some fields where twin wells are drilled, operators have taken two shots when the lower sand proved unproductive; that is, they have come back up the hole and completed a well in the upper producing horizon if the completion in the lower sand was unsatisfactory.

The effect of this operation is it gives producers two wells on some units where they were entitled to one only.

The Texas Railroad Commission last week recessed until February 15 its hearing on the Hardin field which had been set for February 1. Operators on each side agreed to the delay according to Laten Stanberry, chief supervisor of oil and gas for the Commission.

Thompson sees need for continued proration

Ernest O. Thompson, member of the Texas Railroad Commission and chairman of the Interstate Oil Compact Commission, last week called the nation's attention to the continued need for stricter production control. He pointed to the growing volume of stocks and decline of consumer purchasing power as indicating such action was needed. His statement follows:

"Dwindling purchasing power of consumers of gasoline is strongly reflected in the reports on stocks of crude oil above ground, in storage, and stocks of gasoline and gas and fuel oil on hand unsold.

"The reports released yesterday show that crude stocks increased 745,000 barrels last week and gasoline stocks increased 2,059,000 barrels. If you convert this unneeded and unsalable gasoline back to the crude oil equivalent that it took to make it, using 43 percent recovery, which is the United States Bureau of Mines figure, you will find it is 4,788,372 barrels. Add to this the 745,000 barrels of crude oil increase in stocks and you have 5,533,372 barrels net increase in crude or crude finished equivalent in one short week.

"This is a daily average increase of 790,482 barrels. It is alarming.

"The gasoline stocks on hand today are 84,844,000 barrels. This is the all-time peak. The last peak was March, 1937, when we had 83,538,000 barrels of gasoline on hand. At that time we had 282,000,000 barrels of crude oil on hand. Today crude stocks above ground are 304,424,000 barrels, and this is only the first of February. Last year we did not have the depression that is now upon us.

"The Department of Commerce report of January 27, 1938, shows 520,000 wage earners were laid off in November and December. Weekly factory pay rolls were reduced by $17,600,000 per week. This cut in consumers' income is now being sharply reflected in the let up of gasoline sales.

"We in Texas and the other oil states are really manufacturers of these unsalable barrels of oil and gasoline. Is it good sense to continue to produce more oil than the market demands or can absorb? Our independent refineries have their tanks full of gasoline in many instances and are closing down. They are drowning in their own product. All have overproduced. Or, stated the other way, the public has not bought the gasoline.

"Our Sunday shutdown has reduced production by about 178,000 barrels per day. The operators complied with the order in a most sensible manner in Texas. Other states have shown an understanding of the present problem and have made some cuts, but I am calling these above mentioned figures to the attention of the oil industry for careful study.

"I am wondering if it is desirable or wise to continue the mad race of drilling unnecessary oil wells when the market is already fully, if not overstocked. We cannot stop drilling by law. I do deem it our duty to call attention to the present facts that face us. The remedy is simple. Cut production.

"A new oil well was brought in every forty-seven minutes last year in Texas, Sundays and holidays included. Eleven thousand and thirty new oil wells were drilled in Texas last year (1937). The nation drilled 23,600 oil wells in 1937. Those making commitments would do well to consider the above facts. It appears to me that great caution should be shown and exercised at this time.

"The only way to permanently cure the overproduction situation is to reduce production. It is our sworn duty in Texas to limit production to market demand. Texas has nexer failed to do her duty."

Kansas gas and gas/oil ratio order

Ratable production of gas, either from wells producing solely gas, or from wells operating on a gas/oil ratio, is to be obtained through a formula to restrict waste in the Burrton field of Harvey and Reno counties, Kansas. The new order grew out of a hearing held last month, during which it was shown that the present reservoir pressures are lacking in uniformity, that the minimum is about 380, the top about 1050 which was the original rock pressure of the gas wells, drilled into the Chat above the Mississippi. For the current month a total demand for the field of 2,400,000,000 cubic feet of gas has been assigned by the State Commission as proratable to the 315 wells in the Chat formation. This volume is considered the maximum volume for which

there is a definite market, and which can be produced without waste.

The manner of applying the gas nomination to the individual well or lease is through the following computation, 2/5 of the allocation to the acreage containing the well, 2/5 of the allocation to be based upon the productive capacity of the well gauged through open flow testing, and 1/5 is allocated on the basis of the observed pressure within the well.

Oil wells into the formation are also the subject of a fixed ratio in which the gas/oil allowable has been established at 5000 to 1. In cases where it is impossible to produce the oil allowable and at the same time not exceeding the 5000 to 1 ratio, the total crude allowable may be produced with increased gas ratio although in such cases the operator is obliged to return the excess gas to the reservoir. Gas produced in the field shall be metered, and in the determination of the allocation to the various wells in the future, regular six months tests are to be made to determine the then existing formation pressure. The first of these tests is set for about April 15, the second for about October 15, 1938.

Rodessa gas order

An order issued by the Texas Railroad Commission last week provides for proration of gas in the Rodessa field, effective February 1.

The method of allocation included in the order is identical with that which the commission recently ordered for the East Panhandle field, the only other area of Texas in which a gas proration order is in effect. It provides "That the daily allowable production of gas for individual wells in the field shall be determined by dividing the allowable production for the field into two parts, the first part to represent two-thirds (2/3) and the second part, one-third (1/3), of the total allocation, and that the first part shall be distributed to the product of the acreage containing the well by the observed pressure at the well. and that the second part shall be distributed to each well in proportion to the relative producing ability of these individual wells. In no case shall more than one hundred sixty (160) acres be allocated to any one well for the purpose of proration."

Texas to hold condensate hearing

The Texas Railroad Commission has scheduled a hearing for February 23 at Austin to consider wells which are now producing "condensate" in Texas. Some 300 wells fall within this classification; that is, wells which produce crude petroleum oil with ratios in excess of 100,000 cubic feet of gas per barrel.

The operators with wells so classified must be prepared to produce at the hearing a report on each well showing producing depth; tubing size and length; casing size and length; choke size; tubing, casing and trap pressures; gravity of gas; gravity of oil and condensate; production of water, fluid and gas; gas/oil ratio; distillation of oil and condensate.

Oklahoma buyers curtail purchases

Reduction of crude oil purchases below allowables, which was adopted in Kansas in January, has spread to Oklahoma. The result is that four buyers are now accepting 15,000 barrels daily less than the allowables granted to the leases from which they purchase. Status of the crude oil market is such that the policy may be adopted by other buyers in the two states.

Sinclair Prairie Oil Marketing Company set its purchases 10 percent below allowables in Kansas in January. For January this was adopted for Oklahoma. This company is a leading buyer in the two states. Its Oklahoma purchases have been 61,000 barrels daily, while Kansas provided it with 23,000 barrels daily. It serves the shallow stripper well area of the two states.

When Phillips Petroleum Company reduced its Kansas purchases by 20 percent in Kansas in January, it announced that the policy would be continued until further notice. Purchases by this concern previously were around 18,000 barrels daily.

Stanolind Crude Oil Purchasing Company applied its January reduction of 15 percent to Ellis County, Kansas. Until details of the February allowables for these fields is determined by the corporation commission this company will not set its reduction. Lack of pipe line capacity is in part responsible for reducing purchases below allowables with this concern. It is the only concern with pipe line facilities to most of the fields of the county.

Kanotex Refining Company, Arkansas City, Kansas, continues to take but 85 percent of the allowables from the leases to which it is connected in the Wellington pool, where it had been running 3000 barrels daily.

An effort to avoid adding crude oil to storage is responsible for the reduction in runs to below allowables set by the conservation commissions of the two states. For February the Oklahoma Corporation Commission set total allowable for the state at 535,000 barrels daily, a reduction of 15,000 barrels below the January figure and 34,700 barrels below the recommendation of the United States Bureau of Mines for February.

In January the Kansas Corporation Commission set the allowable at 186,472 barrels daily, against a Bureau of Mines recommendation of 179,300 barrels. For February the Kansas allowable was set at 177,000 barrels equal to the recommendation of the federal agency.

Since other major crude purchasers have no desire to add to crude oil stocks there is apprehension that they will adopt the policy of taking less oil than is fixed in the state allowable figures.

Legislation Trends

Elimination of import duty and enactment of a tax on exports asked of Senate, along with the repeal of the Connally Act and Bureau of Mines forecasts.

Export embargo urged by Paul D. Hadlick

Full investigation of exports of petroleum and its derivatives is to be included in the study now being made of domestic supplies of strategic materials by a sub-committee of the Senate Military Affairs Committee of which Senator Elbert D. Thomas (Utah) is chairman, it was made known February 4 by Paul E. Hadlick, secretary of the National Oil Marketers Association.

Disclosing that the investigation, originally directed at iron, steel and other metals, had been expanded at his suggestion, Hadlick also announced that he has submitted to the committee recommendations for repeal of the Connally contraband oil act, discontinuance of the monthly forecasts of the Bureau of Mines, elimination of the duty on oil imports and imposition of an embargo on exports.

The marketers association executive made public a letter written to Senator Thomas, in which he charged that oil is being sold abroad at prices lower than are asked in the domestic market, and that he had supported his allegation with quotations carried by one of the price reporting papers.

"It does seem strange that we should engage in a 'dumping' policy for a natural resource in the face of the 'fake oil conservation policies that have been promulgated to enrich the major oil companies,' Hadlick declared. To cap the climax please recall that Congress has further impeded true conservation by enacting a duty on the importation of petroleum products.

"I have referred above to the 'fake' oil conservation policies of this country. These policies fortified by acts of congress have done nothing whatsoever to conserve our natural resources of oil. The policies, supported by the Connally act, the Interstate Compact and the monthly forecasts of the Bureau of Mines, simply attempt to hold the production of crude oil to market demand so that the major oil companies can get a higher price for their crude.

"If congress desires to really do something to preserve our natural resources of oil it should prohibit or embargo exports, take off the duty on imports so that we can take that which we may from the world markets, and repeal the above mentioned legislation. This will leave the states with their present power to prevent waste in the

production of oil. And this prevention of waste should be limited to the prevention of physical waste without reference to a lot of confusing theories of waste that limit production to market demand."

Texas land quizz

The Senate committee investigating activities of the Texas Land Commission in relation to leasing of state lands spent last week examining several witnesses. Because some witnesses could not be located by the local civil authorities, the committee called on the State Highway Patrol to assist in this work.

The committee's activities seem to have narrowed down to an effort to determine whether Land Commissioner W. H. McDonald was in any way connected with two or three groups of operators who were most successful in obtaining leases on state lands. A common characteristic of the bids offered by these operators was a low cash price with a high royalty.

Oil in the Courts

Federal administration laying plans for additional anti-trust suits . . . Rulings on defense motions in Madison trial not expected before March 15 now.

More trust trials

Heartened by the success at Madison, Wisconsin, last month, Department of Justice officials last week were preparing to renew their drive against the oil industry and plan to bring up for trial next fall the second of the two indictments returned in December, 1936, by the Madison grand jury.

The second indictment names some 70 firms and individuals, among them many who were defendants in the trial recently concluded, and charges a conspiracy entered into in 1931 to fix jobbers margins.

Discussing the recent Madison trial with newspaper men, Attorney General Homer Cummings on February 3 commented on criticism that the jury was prevented from considering the background of the case and that the government had forced oil companies into taking the steps for which they were criminally indicted, pointing out that the government introduced some of the testimony and holding that some of the critical comment was made on an incorrect basis.

Indications are that if the government is successful in its second suit, the drive against the oil industry will be continued, with prosecutions to be initiated in the eastern market, where agents of the department have for some months been engaged in a study of oil company practices.

Anti-trust rulings not before March

Arguments on motions by which it is hoped to gain an arrest of judgment, a new trial, or the verdict set aside for 16 major oil companies and 30 oil company executives, likely will not be heard before March 15, Federal Judge Patrick T. Stone announced last week. The companies and individuals were found guilty by a federal court jury of conspiring to artificially raise and fix gasoline prices during 1935 and 1936 in 10 Mid-Western states through operation of buying pools in the East Texas and Mid-Continent fields. Judge Stone said he would hold court at Superior, Wisconsin, this month.

Carbon black taxed

Carbon black produced in Texas is subject to tax regardless of the method of manufacture employed, according to a decision handed down last week by a Civil Court of Appeals. The Peerless Carbon Company insisted that its product was not carbon black within the meaning of the statute which provides specifically that the tax would apply to "all black pigment produced in whole or in part from natural gas, casinghead gas or residue gas by the impinging of a flame upon a channel disc or plate, and the tax imposed shall reach all producers producing in such a manner."

Texas to sell 97,000 barrels confiscated oil

Assistant Attorney General W. J. Holt announced last week that the State of Texas plans to sell at once 97,000 barrels of confiscated oil located in the East Texas field. There is on hand approximately 400,000 barrels of this oil, but Holt said that the state had no intention of disposing of it under present market conditions.

The oil to be sold is that which has been endangered by recent floods in the field. There is some 60,000 barrels in the pit on the river bank which is so viscous that it did not move out of the pit when flood waters washed out one wall recently. The remainder of the oil which is to be sold includes 16,000 barrels in one pit and 21,000 barrels in another.

Holt said the oil would be sold after a line to the pits had been laid.

Labor Situation

Mexican labor decision not expected before Easter at earliest . . . Labor board charges Shell with unfair practices . . . Gulf seamen sign C. I. O. contract.

ALTHOUGH no important development in the oil industry's labor situation took place during the past week, a few minor events may be summed up as follows: a final decision in the Mexican labor conflict is not anticipated before Easter; Shell Petroleum Corporation is condemned of alleged unfair labor practices; and Gulf Oil Corporation signs a wage and hour contract with seamen of its oil tankers.

Review of the appeals by the ten oil and three tanker companies involved from the government's verdict in the general oil conflict has been started by the federal supreme court, but in view of the complicated nature of the case a decision is not expected before Easter.

In the meantime, labor peace has been made by Mexican Eagle Oil Company with its Poza Rica zone workers with the making of contracts that increase wages and allow such concessions as free houses, medicines and medical services for the workers and their families.

Ruling that Shell Petroleum Corporation had engaged in alleged unfair labor practices at its Wood River, Illinois, refinery, W. P. Webb, trial examiner, filed a report with the National Labor Relations Board last week recommending reinstatement of three employes. He also recommended payment of wages the men would have earned since their discharge last May 14, and that the company cease and desist from interfering with, restraining, coercing or discouraging membership in labor organizations and post notices on company premises to that effect.

Gulf Signs Contract

The National Maritime Union, affiliated with C.I.O., last week signed a wage and hour contract with the Gulf Oil Company covering 1100 unlicensed seamen on 29 oil tankers. This contract stipulates a three weeks vacation with pay, which would mean the hiring of 65 additional men. Wage increases were $5 to $10 monthly.

THE VALUE OF

Shot Point and Short-Distance Geophones

IN SEISMIC PROSPECTING

By V. G. GABRIEL
General Geophysical Company,
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and
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THIS article is dealing with the data pertaining to both the shot point and 100-foot distant geophones. At first the simple formulae are derived and put in a form well suited for use in seismic field work; then the results of the study of a few seismograms are given in table form. Finally the conclusions are drawn as to the special value and reliability of both the shot point and short distance geophones.

At present many seismic parties are using a shot hole and short-distance geophones to obtain additional data on the thickness of a weathering layer and on the position in depth of a charge best suited to give better reflections. However, often the data so obtained are not used to the best advantage because of the absence of systematic information pertaining to the shot and near shot-hole geophones. Believing in the necessity of systematic study the authors of this article decided to investigate the problem of the shot hole and near shot-hole geophones concurrently with the restudy of correlations of a seismic reflection survey made some time ago. It was also decided upon to use only an accuracy in evaluation and methods involved which is commonly practiced in the field by many seismic parties, in order to check their validity for use in every day field seismic reflection work.

Published with the permission of C. L. Moody, geologist, Ohio Oil Company, and E. W. Johnson, president, General Geophysical Company, Houston, Texas.

ASSUME that a geophone is placed at the shot point (see Sketch I). Also by assuming that the thickness of the slow velocity, i.e., of the weathering layer at the shot point is x feet, the depth of charge of dynamite below the slow layer is y feet, the velocity of propagation of longitudinal waves, i.e., of the fastest waves in the weathering layer is equal to Vw feet per second, the velocity of propagation of longitudinal wave in the first high velocity underlayer is Va feet per second, we obtain

$$x + y = H$$

$$\frac{x}{Vw} + \frac{y}{Va} = T$$

Where: H is the total depth of charge in feet
T—Travel time from charge place to shot hole geophone in seconds.

By solving these two equations we obtain:

$$x = \frac{Vw\,(VaT - H)}{Va - Vw}; \quad y = \frac{Va\,(VwT - H)}{Vw - Va}$$

For our case where x and y are expressed in feet and for Vw equal 2000 feet per second, and for Va equal 6000 feet per second, we have by substitution into the formulae for x and y.

Or:

$$x = \frac{2000\,(6000\,T - H)}{6000 - 2000} = + \frac{6000\,T - H}{2} = 3000T - H/2$$

$$y = \frac{6000\,(2000\,T - H)}{2000 - 6000} = + \frac{(H - 2000\,T)}{2} 3 = 1.5H - 3000T$$

The path of propagation of elastic waves from the charge of dynamite placed in the first high velocity underlayer to a geophone situated at the earth surface (see Sketch 2) can be considered for practical purposes as composed of two straight lines as follows: A line L connecting a charge of dynamite and a point situated on the top of the first high velocity underlayer and under the geophone, and a straight line connecting the underlayer point with the geophone at the surface. Then for Sketch 2 we have:

$$\frac{L}{Va} - \frac{X}{Vw} = T$$

Where:
X—is the length of the path of elastic motion in the slow velocity layer.
L—is the length of the path of elastic motion in the underlayer in feet.
Va—Velocity of propagation in the underlayer in feet per second.
Vw—Velocity of propagation in the weathering layer in feet per second.
T—Travel time from the point of explosion to the geophone in seconds.

$\frac{L}{Va}$ is a ratio equal to travel time in the underlayer in seconds.

Or:

$$X = \frac{(T - L)\,Vw}{Va}$$

For practical considerations and for thickness of the slow velocity layer not exceeding 50 feet, it is safe to assume, without an introduction of perceptible error, that X, i.e., the length of the path of elastic waves in a slow velocity layer, is equal to the thick-

TABLE 1

Shot Hole and 100 Feet Distance Geophones Chart

Shot Point	Depth of Charge in Feet	Tr. Time to Shot Hole Geophone in .001 Sec.	Thickness of Weathering at Shot Point in Feet	Tr. Time to 100 Ft. Distance Geophone in .001 Sec.	Thickness of Weathering at 100 Ft. Geophone in Feet	Charge of Dynamite in Lbs.
116-W						
D	45	13	16	...	...	5
F	35	12	18	...	...	2½
B	45	13	16	...	...	1½
A	45	13	16	...	...	½
119-E						
B	45	15	22	...	...	2½
I	25	12	23	...	...	1½
D	35	14	24	...	...	1¼
F	35	13	22	...	...	2½
G	35	14	24	...	...	1½
H	25	13	25	...	...	1½
120-S						
H	25	12	23	...	...	2½
E	45	14	20	...	...	2½
C	45	14	20	...	...	1¼
G	35	13	21	...	...	2½
F	35	13	21	...	...	1¼
B	45	14	20	...	...	¾
A	45	15	22	...	...	½
I	25	11	21	...	...	2½
122-N						
B	48	16	24	...	...	2½
F	35	14	25	...	...	7½
D	35	15	27	...	...	2½
A	48	16	24	...	...	½
C	49	17	26	...	...	2½
80-S						
B	44	16	25	...	...	1½
A	45	17	28	...	...	½
E	35	...	...	28	23	2½
D	44	...	...	28	22	2½
C	44	...	...	26?	?	2½
78-E						
C	45	...	...	25	15	1¼
E	35	...	...	25	16	1¼
F	35	...	...	24	14	1¼
D	45	...	...	25	15	2½
B	45	14	19	...	...	3
112-N						
G	35	14	25	...	...	2½
C	45	16	25	...	...	2½
D	45	16	25	...	...	7½
113-W						
A	45	13	16	...	...	½
G	35	...	...	26	18	5
B	35	...	...	27	20	2½
I	20	9	17	...	...	2½
I	20	10	17	...	...	5
93						
B	45	22	43	...	...	...
C	36	...	...	37	41	...
D	35	...	...	38	43	...
E	35	...	...	37	41	...
C-W	45	22	43	...	...	...
71-W						
B	45	15	22	...	...	...
C	45	16	25	...	...	...
71-E						
A	35	...	...	31	29	...
C	35	...	...	31	29	...
B	35	...	...	31	29	...
72-E						
D	35	...	...	24	14	...
B	45	15	22	...	...	...
G	25	...	...	23	13	...
F	25	...	...	23	13	...
A	45	15	22	...	...	...
C	35	...	...	24	14	...
E	25	...	...	23	13	...
74-A						
	45	...	...	29	24	...
	30	...	...	28	23	...
	35	...	...	28	23	...
	31	...	...	27	21	...
	30	...	...	27	21	...
77-E						
	45	13	16	...	...	...
	45	14	19	...	...	...
	35	13	21	...	...	...
	25	12	20	...	...	...
	20	10	y=o	...	...	...
	18	9	y=o	...	...	...

Remarks: Vw = 2,000 feet per second.
Va = 6,000 feet per second.

67 E						
G	20	...	...	.022	11	...
H	20	...	...	.022	11	...
C	45	...	...	.023	11	...
F	20	...	...	.021	9	...
E	30	...	...	.022	10	...
D	45	...	...	.023	11	...

ness of the slow layer right under the one hundred foot distant geophone.

Shot Hole and 100 Foot Distant Geophones Chart

The chart, Table 1, gives the result of a study of the seismic reflection seismograms of 14 shot points selected on account of their suitability for the problem under investigation with no attention paid to the distances separating them from each other.

The first column of the chart gives the numbers of the shot points and the capital letters are given to identify various seismograms pertaining to the same shot point; the second column gives the depths of dynamite charges in a shot hole in feet; the third column contains the total travel times from the dynamite charges to a shot-hole geophone as taken from the seismograms and expressed in thousandths of a second. The fourth column gives the thickness of a weathering layer at the shot points in feet computed according to the formula given above. The fifth column gives the total travel times from the charge places to the one hundred foot distant geophones expressed in feet computed with the application of the corrected Distance-Travel Time Table. (See Table 2.) The seventh column gives the charge of dynamite for each shot in pounds.

The examination of the fourth column giving the thickness of the weathering layer at the shot holes, indicates a relatively small variation from the mean for the values obtained for various shots taken at the same shot point. For four shots at shot point 116-w the mean value is equal to 16½ feet and the maximum deviation from the mean is equal to 1½ feet. The mean value for shot point 119-E is equal to 23½ feet and the deviation from the mean is equal to 2½ feet. The mean value for shot point 120-S is equal to 13 feet and the maximum deviation is equal to 2 feet. Similarly the rest of the shot points show deviations of almost the same magnitude.

The examination of the column containing the

TABLE 2

Corrected Distance-Travel Time Table

H — X_1 in Feet	Ratio $\frac{L}{Va} = \frac{100 \text{ Ft.}}{6{,}000 \text{ Ft.}}$ in .001 Seconds	Corrected Length L in First Fast Underlayer in Ft.	Corrected Ratio $\frac{L}{Va}$ — in .001 Seconds
20.....	16.5	102	17.0
25.....	16.5	103	17.0
30.....	16.5	104	17.5
35.....	16.5	106	17.5
40.....	16.5	108	18.0
45.....	16.5	110	18.5
50.....	16.5	112	18.5
55.....	16.5	114	19.0
60.....	16.5	117	19.5
65.....	16.5	119	20.0
70.....	16.5	122	20.5

Legend: H—the total depth of charge in feet.

X_1—approximate thickness of weathering layer under 100 geophone in feet, computed by accepting L equal 100 feet.

Va—Velocity of elastic waves in the first high velocity. Underlayer in feet per second.

L—the length of path of elastic waves in the first high velocity underlayer in feet.

$$X = \frac{(T - L)\,Vw}{Va}$$

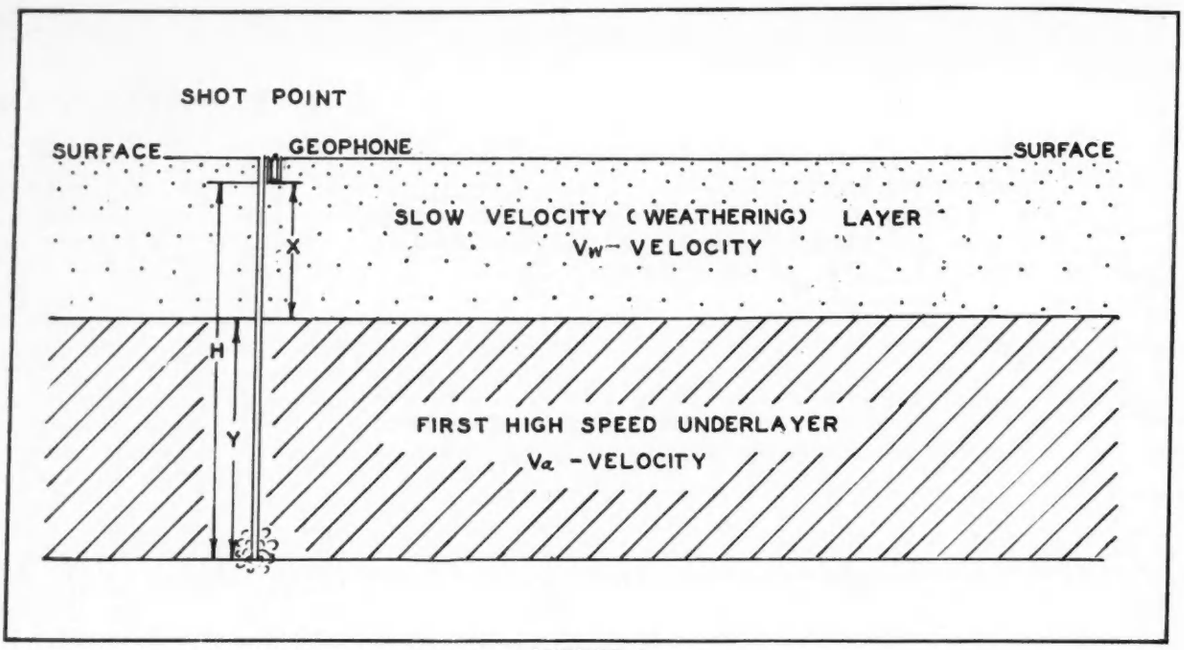
Where: X—is corrected thickness of the slow velocity layer at the 100 feet distance geophone in feet.

$\frac{L}{Va}$ is a corrected ratio in .001 second.

T—total travel time in .001 second.

Vw—is equal 2,000 feet per second.

Va—is equal 6,000 feet per second.



SKETCH 1

thickness of the weathering layer under the 100-foot distant geophones shows the same small deviations from the mean, due chiefly to some small errors in reading travel times on the seismograms.

Conclusions

Small deviations from the mean in the determination of the thickness of a weathering layer by the applications of the formulae given in this paper show that these formulae can be safely and more broadly used in seismic prospecting to find the thickness of a slow velocity (weathering) layer.

The consistency of data obtained for a 100-foot distant geophone indicates that the paths of elastic motion in the first high-velocity underlayer for short distances are straight lines connecting the point charges and practically a common point situated in the same medium for the same shot point and the same distance geophone.

The study of the last column shows that the degree of deviation from the mean is independent of the amount of dynamite used for the shot.

In conclusion the authors of this article wish to express their thanks to Messrs. K. R. Wells, A. R. Harris and P. M. Konkel, all of General Geophysical Company, for their cooperation.

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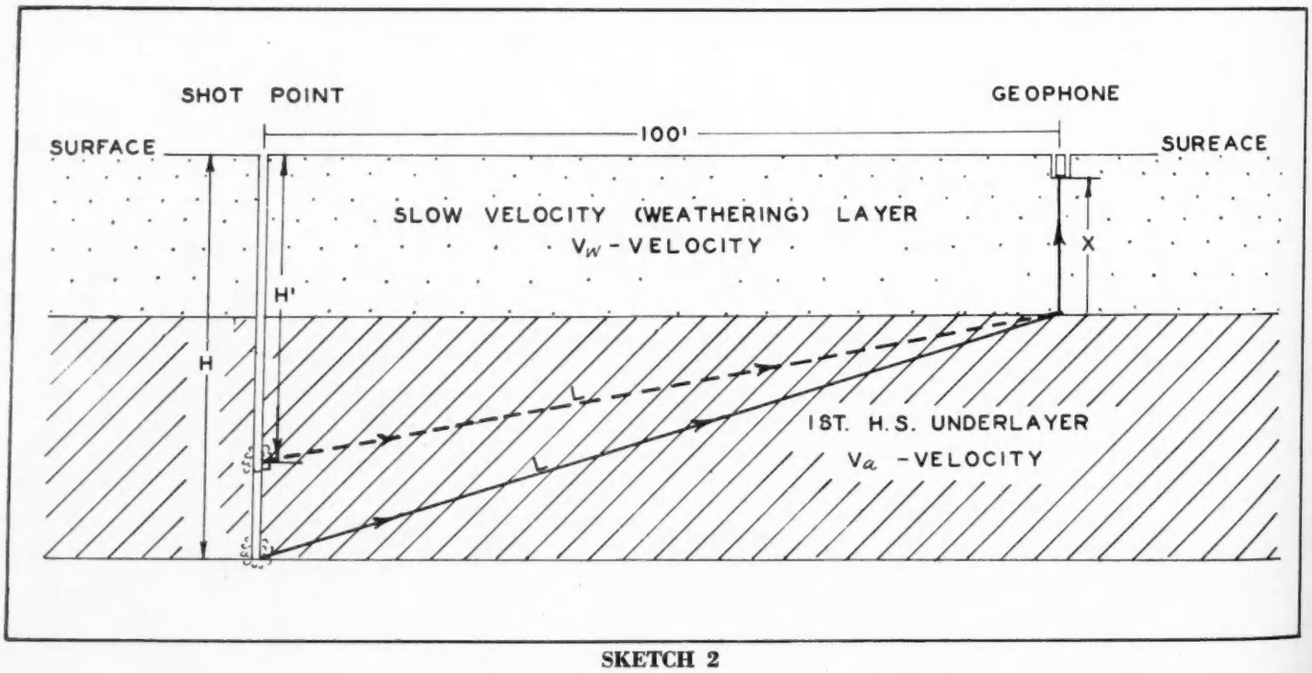


SKETCH 2

Texas Coast Reserves and Drilling Increasing

By CHARLES B. LEYENDECKER,
Staff Writer

WITHIN a radius of 150 miles of Houston, an area familiarly known as the Texas Gulf Coast, is one of the greatest concentrations of known unproduced crude oil reserves in the world. It is estimated that there are 2,361,045,000 barrels discovered that r e m a i n in the ground, or more than 15 percent of the volume in the United States.

Not only does the region have a large portion of the reserves, but they are increasing at a rate matched by few other territories. Moreover, drilling operations are on upswing, and promise to continue upward in the future.

This sector has over 80 commercial oil fields, several gas pools and a few abandoned fields. In 37 years, the area has produced 1,081,-680,000 barrels of oil.

Reserves Gain

Reserves during 1937 increased 377,246,000 barrels over 1936. This is an average of over five barrels of oil found to every barrel of oil produced during the year. There were over 70,000,000 barrels produced during 1937 in the Texas Gulf Coast.

Friendswood, Harris County, accounted for the major increase in reserves during the year. The field is estimated to have an ultimate recovery of 250,000,000 barrels. Other than this 250,000,000-barrel field, there were 127,246,000 barrels discovered in new fields, extensions and new sands. Or in other words, 1½ barrels of oil replaced with every barrel produced during 1937.

With an estimated reserve of 2,-361,045,000 barrels of oil the Texas Gulf Coast out ranks any one other district in known reserves. East and East Central Texas have a known reserve of nearly two billion barrels. South West Texas has nearly one billion barrels; West Texas, one and a half billion barrels; North Texas less then 500,-000,000 barrels, and the Panhandle has around 325,000,000 barrels in reserve.

With the exceptions of two states, the Texas Gulf Coast, outranks all other states in the United States in known reserves. These two states are California and Texas. The Texas sector of the Gulf Coast only falls short of 634,-000,000 barrels of outranking the whole state of California in known reserves.

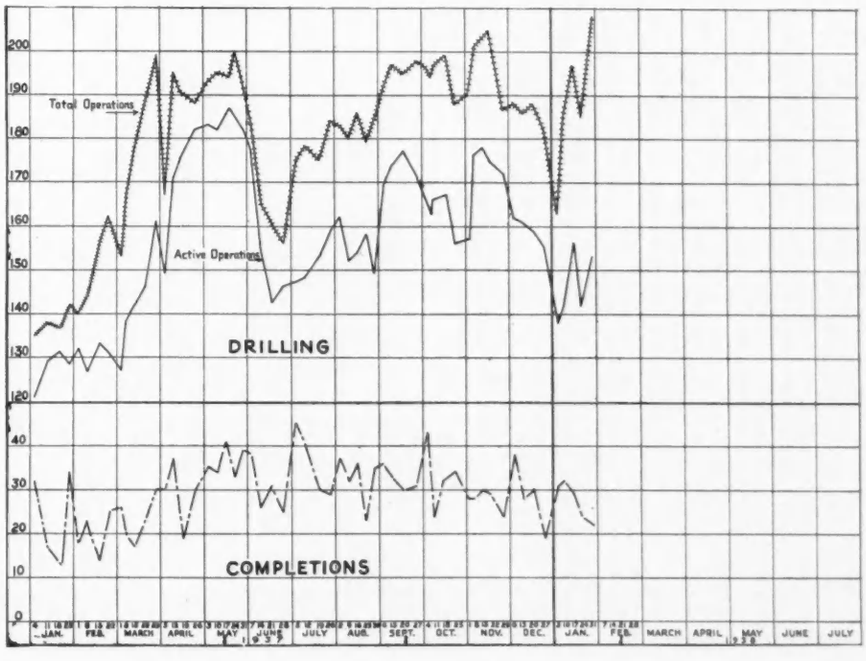
The Texas Gulf Coast has 32.6 percent of the known reserves in Texas, and indications are that this area will increase more than that during the coming year. There are a number of likely prospects now being drilled that will probably result in major oil fields.

Drilling Increasing

Drilling in the area is on the upward swing, and the total number of operations were at an all-time peak during the past two years. Since the sudden drop in active operations during December 1937 the curve is gradually starting upward. This upward swing in active operations will no doubt swing the completion curve to a new high.

There was a lull in drilling the latter part of 1937 due to let down of a rapid drilling campaign at Hastings field, Brazoria County. Where there were around 30 rigs in operation in this area there are

Texas Gulf Coast Drilling Activity Is Up



only about 10 now. However, drilling in this area will continue to be active during 1938 because of offset drilling to shallow wells on the northwest side of the field. There is still a number of wells to be completed on the west, northwest, northeast, and southwest side of the field.

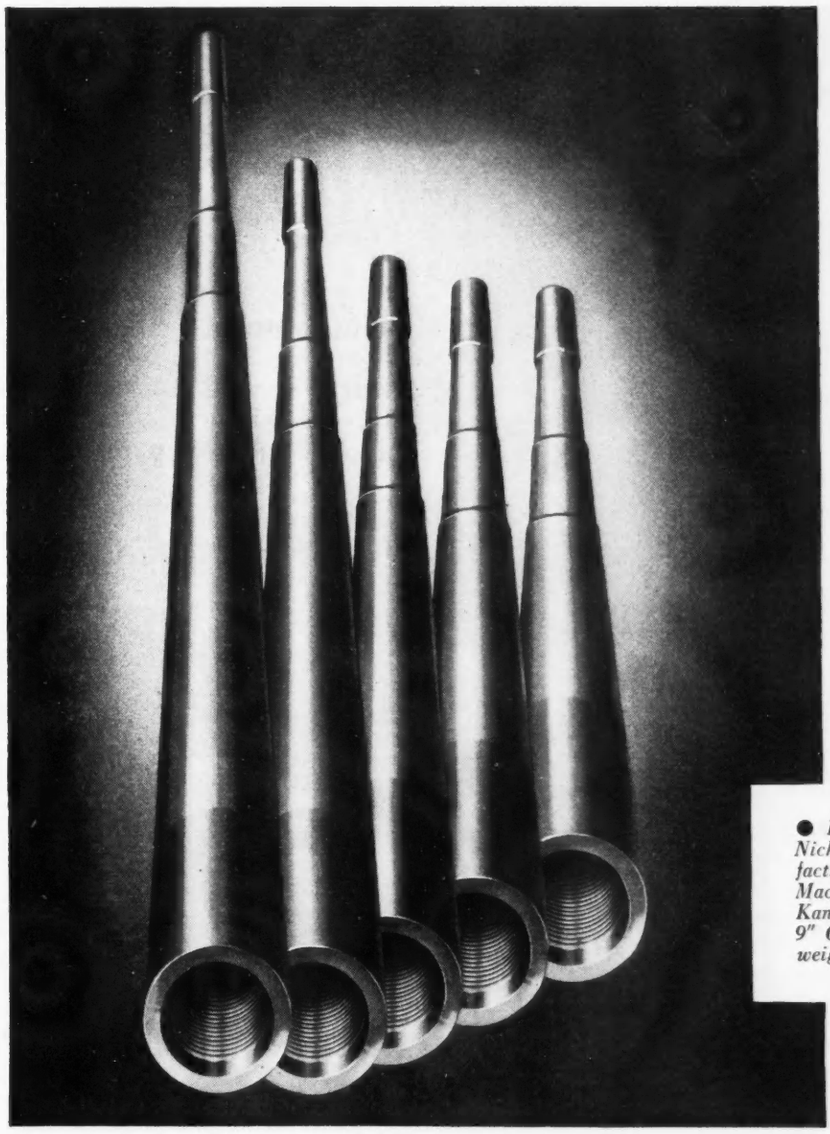
There are 208 total operations on the Texas Gulf Coast, including locations, drilling, shut downs, rig up, etc. This amount is being increased with the large number of new locations being made each week. Active operations, which includes drilling, rigging up, moving in, etc., total 153. Operators are starting their 1938 drilling campaign after budgets were fixed for the year.

Texas Gulf Coast Crude Reserves by Fields

FIELDS	County	Proven Acreage	ESTIMATED ULTIMATE RECOVERY				Cumulative Production Jan. 1, 1938	Reserves
			January, 1937	January, 1938	Increase	Remarks		
Ace	Polk	50	500,000	500,000	.....	.....	103,000	397,000
Allen	Brazoria	10	100,000	100,000	.....	.....	85,000	15,000
Amelia	Jefferson	1,300	20,000,000	20,000,000	.....	.....	1,410,000	18,590,000
Anahuac	Chambers	6,600	300,000,000	300,000,000	.....	.....	7,281,000	292,719,000
Ariola	Hardin	100	4,000,000	4,000,000	.....	.....	1,678,000	2,322,000
Bammel (distillate)	Harris	300	.....	500,000	500,000	New field	8,000	492,000
Barbers Hill	Chambers	400	80,000,000	80,000,000	.....	.....	61,001,000	18,999,000
Batson	Hardin	600	45,000,000	45,000,000	.....	.....	38,283,000	6,717,000
Big Creek	Ft. Bend	250	10,500,000	10,500,000	.....	.....	9,345,000	1,155,000
Blue Ridge	Ft. Bend	375	12,000,000	12,000,000	.....	.....	10,544,000	1,456,000
Boling	Wharton	225	6,500,000	8,000,000	1,500,000	Flank development	5,601,000	2,399,000
Brenham	Washington	50	500,000	500,000	.....	.....	352,000	148,000
Buckeye (Wilson Creek)	Matagorda	100	2,000,000	2,500,000	500,000	Flank or new discovery	658,000	1,842,000
Call	Newton	100	.....	1,500,000	1,500,000	New Field	6,500	1,494,000
Cedar Bayou	Harris	50	.....	250,000	250,000	New field	.....	250,000
Clam Lake (McFaddin)	Jefferson	100	.....	2,500,000	2,500,000	New field	.....	2,500,000
Clay Creek	Washington	350	5,500,000	5,500,000	.....	.....	3,954,000	1,546,000
Cleveland	Liberty	600	2,500,000	2,500,000	.....	.....	931,000	1,569,000
Clinton (distillate)	Harris	225	1,000,000	1,000,000	.....	.....	8,500	991,000
Conroe	Montgomery	17,600	670,000,000	670,000,000	.....	.....	86,876,000	583,124,000
Cotton and South Cotton Lake	Chambers	1,000	2,000,000	6,000,000	4,000,000	New Field	384,000	5,616,000
Damon Mound	Brazoria	250	10,500,000	10,500,000	.....	.....	9,345,000	1,155,000
Danbury	Brazoria	*100	4,000	500,000	496,000	New discovery	9,000	491,000
Dickinson	Galveston	4,150	40,000,000	40,000,000	.....	.....	2,942,000	37,058,000
Esperson	Liberty	500	9,000,000	9,000,000	.....	.....	4,803,000	4,197,000
Eureka	Harris	100	500,000	500,000	.....	.....	33,000	467,000
Fannett	Jefferson	100	3,500,000	3,500,000	.....	.....	2,216,000	1,284,000
Friendswood	Harris	5,000	.....	250,000,000	250,000,000	New field	95,000	249,905,000
Garwood	Colorado	*50	100,000	100,000	.....	.....	2,000	98,000
Goose Creek	Chambers	950	90,000,000	90,000,000	.....	.....	76,091,000	13,909,000
Green's Lake	Galveston	50	150,000	150,000	.....	.....	32,000	118,000
Hankamer	Liberty	375	7,500,000	7,500,000	.....	.....	4,910,000	2,590,000
Hardin	Liberty	1,200	1,000,000	8,500,000	7,500,000	Extensions and new sands	415,000	8,085,000
Hastings	Brazoria	5,000	375,000,000	400,000,000	25,000,000	Extensions and new sands	8,858,000	391,142,000
High Island	Galveston	300	25,500,000	28,000,000	2,500,000	Flank development	14,295,000	13,705,000
Hitchcock	Galveston	100	500,000	500,000	.....	.....	18,000	482,000
Hull	Liberty	750	100,000,000	100,000,000	.....	.....	84,519,000	15,481,000
Humble	Harris	2,500	130,500,000	130,500,000	.....	.....	122,595,000	7,905,000
Kittrell	Houston	150	2,500,000	2,500,000	.....	.....	1,226,000	1,374,000
Labelle	Jefferson	180	.....	1,000,000	1,000,000	New field	15,000	985,000
Livingston	Polk	2,100	15,750,000	15,750,000	.....	.....	4,289,000	11,461,000
Lochridge	Brazoria	1,800	15,000,000	15,000,000	.....	.....	280,000	14,720,000
Lost Lake	Chambers	85	1,500,000	1,500,000	.....	.....	893,000	607,000
Louise	Wharton	1,500	5,500,000	5,500,000	.....	.....	1,747,000	3,753,000
Magnet	Wharton	1,000	9,000,000	9,000,000	.....	.....	136,000	8,864,000
Manvel	Brazoria	1,900	50,000,000	50,000,000	.....	.....	10,838,000	39,162,000
Markham	Matagorda	200	10,500,000	10,500,000	.....	.....	6,574,000	3,926,000
Mykawa	Harris	300	5,000,000	5,000,000	.....	.....	3,019,000	1,981,000
Nash	Harris	120	1,750,000	1,750,000	.....	.....	1,667,000	83,000
Nome	Jefferson	1,000	10,000,000	10,000,000	.....	.....	648,000	9,352,000
North Cheek	Jefferson	550	.....	5,000,000	5,000,000	New field	30,000	3,970,000
North Dayton	Liberty	75	2,500,000	2,500,000	.....	.....	2,298,000	202,000
Old Ocean	Brazoria	4,000	7,000,000	35,000,000	28,000,000	Extensions and new sands	735,000	34,265,000
Orange	Orange	420	35,000,000	36,000,000	1,000,000	New sands and extensions	32,238,000	3,762,000
Orchard	Ft. Bend	150	5,000,000	5,000,000	.....	.....	3,309,000	1,691,000
Palacious	Matagorda	360	.....	1,000,000	1,000,000	New field	34,000	966,000
Pickett Ridge	Wharton	1,500	10,000,000	10,000,000	.....	.....	1,425,000	8,575,000
Pierce Junction	Harris	320	40,000,000	40,000,000	.....	.....	31,761,000	8,239,000
Port Neches	Orange	225	12,000,000	12,000,000	.....	.....	4,480,000	7,520,000
Raccoon Bend	Austin	2,800	65,000,000	65,000,000	.....	.....	19,061,000	45,939,000
San Felipe	Waller	30	100,000	100,000	.....	.....	20,000	80,000
Sandy Point	Brazoria	1,100	.....	6,000,000	6,000,000	New field	52,000	5,948,000
Saratoga	Harlin	575	30,000,000	30,000,000	.....	.....	28,453,000	1,547,000
Satsuma	Harris	800	4,000,000	4,000,000	.....	.....	153,000	3,847,000
Seabreeze—Willow Slough	Chambers	3,000	1,000,000	20,000,000	19,000,000	New field or sand	33,000	19,967,000
Sour Lake	Hardin	900	90,000,000	90,000,000	.....	.....	78,553,000	11,447,000
Segno	Polk	1,000	5,000,000	10,000,000	5,000,000	New sand and extension	465,000	9,535,000
Silsbee	Hardin	1,000	9,000,000	9,000,000	.....	.....	435,000	8,565,000
South Bay City	Matagorda	500	3,000,000	3,000,000	.....	.....	179,000	2,821,000
South Houston	Harris	650	10,000,000	10,000,000	.....	.....	3,258,000	6,742,000
South Liberty	Liberty	230	20,000,000	20,000,000	.....	.....	15,299,000	4,701,000
Spindletop	Jefferson	425	140,000,000	140,000,000	.....	.....	123,915,000	16,085,000
Spurger	Tyler	600	.....	5,000,000	5,000,000	New field	70,000	4,930,000
Sugarland	Ft. Bend	1,175	90,000,000	90,000,000	.....	.....	26,193,000	63,807,000
Thompson	Ft. Bend	3,990	210,000,000	210,000,000	.....	.....	25,816,000	184,184,000
Tomball	Harris	8,150	50,000,000	50,000,000	.....	.....	8,801,000	41,199,000
Turtle Bay	Chambers	1,100	10,000,000	10,000,000	.....	.....	485,000	9,515,000
Van Vleck	Matagorda	1,000	20,000,000	20,000,000	.....	.....	1,193,000	18,807,000
West Beaumont	Jefferson	500	4,000,000	4,000,000	.....	.....	370,000	3,630,000
West Columbia	Brazoria	500	90,000,000	100,000,000	10,000,000	New sand and extension	80,318,000	19,682,000
Withers—Five Corners	Wharton	2,400	20,000,000	20,000,000	.....	.....	805,000	19,195,000
Total	.....	102,220	3,064,954,000	3,442,200,000	377,246,000	.....	1,081,155,000	2,361,045,000

* Fields which were abandoned but came back in for production.

Abandoned fields not tabulated above have produced 525,000 barrels, raising total Texas Gulf Coast cumulative production to 1,081,680,000 barrels. These fields are: Hawkinsville, Matagorda County; Sheppards Mott, Matagorda County; Splendora, Montgomery County; Big Hill, Jefferson County; Big Hill, Matagorda County; Hockley, Harris County; Hoskins Mound, Brazoria County; Pledger, Brazoria County; Moss Bluff, Liberty County; Rockland, Tyler County and Stratton Ridge, Brazoria County.



● *Rotary drill collars of Nickel-chromium steel manufactured by the Bridgeport Machine Company, Wichita, Kan. Sizes vary from 4⅝" to 9" O.D., length up to 30 ft., weight up to 3200 lbs.*

For FASTER, STRAIGHTER deep-well drilling, use

Long drill collars made of these hard, tough Nickel alloys put weight and strength where needed most

● Long drill collars of the type illustrated are today used almost universally in deep well drilling. The reason: They concentrate weight at the bottom of the drilling strings, directly behind the bit—help hold the drill stem *rigid* and so permit faster drilling of straighter holes.

Consider the stresses to which these drill collars—some of them 30 feet long—are subjected, a half mile to a mile below the surface: Compression caused by weight of drill pipe and rotating equipment; resistance to rotation offered by the bit; bending of drill pipe due to its small size in the considerably larger hole. In addition, sharply varying stresses are caused by changing strata of rock and soil.

ALLOY NICKEL STEELS

In such severe service, high hardness, toughness and strength are obviously essential. Hence, Nickel-chromium steel (S.A.E. 3140) is used for the drill collars illustrated. Forged in two operations, these tools are heat-treated in special furnaces to develop uniform properties and structure throughout their entire length. Each is then quenched in oil horizontally in one operation. The resulting tensile strength is 125,000/148,000 p.s.i. yield point 75,000/105,000, and hardness 275 to 310 Brinell—plus good ductility and toughness. "The strongest, toughest and hardest drill collars made," is the description applied by the manufacturer.

Consultation on the use of Nickel alloy steels is invited.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N.Y.

Deep Drilling

Time appears ripe for setting of new world record in deep drilling in 1938, and deeper oil production is promised

By L. J. LOGAN
Associate Editor

IT IS a good guess that in 1938 new world records will be established for both drilling depths and producing depths.

For over the years, the trends have been steadily toward greater depths, and the records existing in any year have never held long.

In 1937 producing depths became greater than previously. And increased ultra-deep drilling indicated that still greater producing depths were not far ahead.

New Record Likely

As regards the greatest depth penetrated by the drill, the time is ripening for another new world's record. The world record of 12,786 feet that was established in 1935 remained unbroken in 1936 and 1937. But already several other wells have gone below 12,000 feet and within a few hundred feet of the record. And drilling below 10,000 feet has become so common that it probably will be only a short time until a new world record in deep drilling will be set.

While 1938 quite possibly will bring new world records in deep drilling and deep producing, the year is sure to witness a further expansion of drilling below the 10,000-foot level, as wells of that depth already had become common in 1937, while several fields were yielding commercial production from below 10,000 feet.

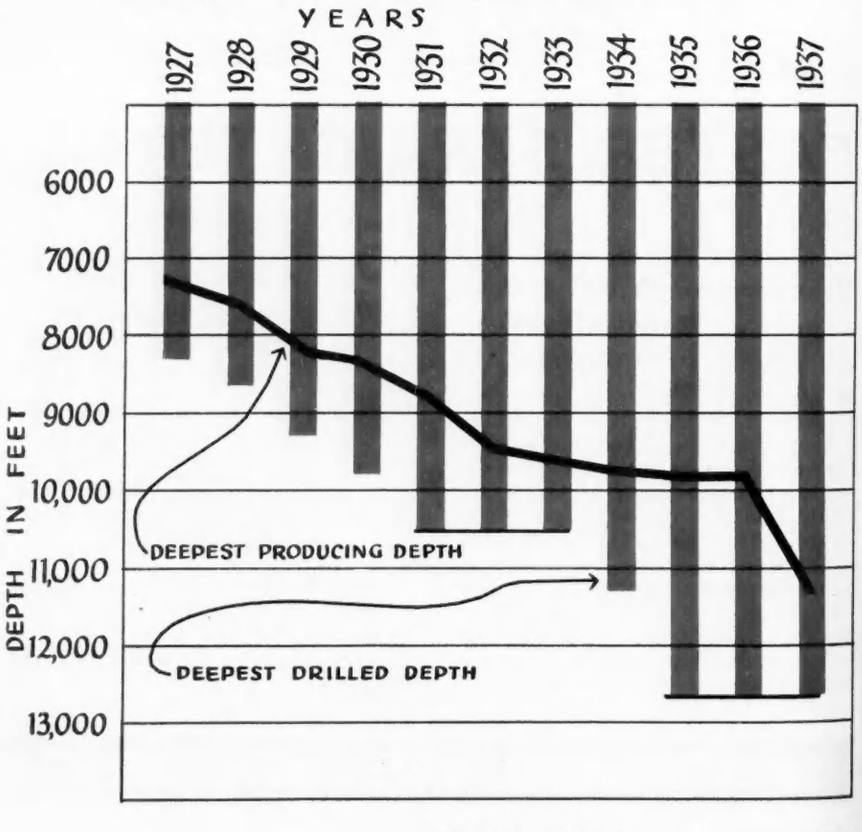
The greatest significance of this prospect for new depth records and increased deep drilling in 1938 is the possibility involved for material addition to known recoverable oil reserves.

The modern, constant, heavy drain on established reserves lays large responsibility on the oil industry as regards development of new supplies to compensate for those being taken from the ground.

Deep drilling represents one of the principal solutions of this perennial problem, furnishing additional reserves from levels previously unexplored.

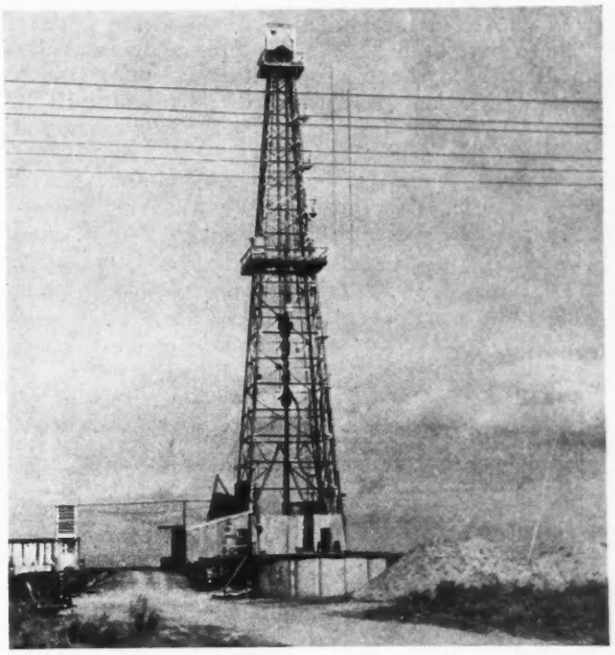
In fact, it has become increasingly

Drilling and Producing Depths Steadily Increase



difficult to bolster reserves in the other important manner—by finding new, shallower fields. And the most promising opportunities now seem to lie in the drilling of deep wildcat prospects or in exploration of deeper zones beneath the producing formations of established fields.

So far, the industry has been rewarded substantially in its efforts to maintain reserves through the deeper drilling, and necessity probably will drive the industry to further success along this line, in consequence of the diminishing possibilities of shallower drilling.



This well at Rio Bravo field, California, yielding oil from 11,302 feet, is world's deepest producer.

Methods Advance

Making possible the present deep drilling and promising to make possible the reaching of even greater depths are the advancements in drilling methods and equipment.

The present ability to drill below 12,000 feet was gained only through years of experience, study, and determination on the part of oil company men and equipment company men. And more of the same elements will make even greater depths possible in the future.

Exploration Progresses

At the same time, making practical and economically sound the reaching of the increased depths has been the valuable cooperation of the geologists and geophysicists. Those men have kept abreast of the demand for deeper oil sands, developing uncanny ability to pick the right places to drill. The geophysicists repeatedly have proved their ability to find and outline structures buried thousands of feet beneath the surface. And they now are prepared to show the way to even deeper structures.

Thus all the elements exist for greater drilling and producing depths in coming years. The ever-increasing consumption of oil gives the incentive for finding new reserves. Deep drilling offers the best possibilities for yielding the discoveries. The geophysicists and geologists can find the deep structures. And equipment and methods will be available for reaching the deep formations.

World's Deepest Test

If a well sets a new deep drilling record in 1938 it will have to go below 12,786 feet. For that is the mark set by Gulf Oil Corporation's McElroy 103 in the Gulf-McElroy field, Upton County, West Texas, in May, 1935. That was the first well to go below 12,000 feet. But subsequently 6 other tests have been drilled below the 12,000-foot level.

In addition, 16 wells have reached depths between 11,000 and 12,000 feet. And 62 had been drilled to depths between 10,000 and 11,000 feet by the beginning of this year.

Many 10,000 Foot Tests

Altogether, therefore, 84 wells have been drilled below 10,000 feet, since the industry got excited in May, 1931, over the first test to go past the 10,000-foot level. That well was Chanslor-Canfield-Midway Oil Company's Hobson A-2 at Rincon field, Ventura County, California. It reached 10,030 feet, but was not productive until plugged back.

The 10,000-foot drilling has oc-

Wells Drilled Below 10,000 Feet Outside United States

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc
IRAN (Persia)			
Anglo Iranian Oil Co.'s Pirgah 2, at Zeloi, Iran	10,026	April, 1936	Dry hole. First 10,000 ft. test east of Suez. Reached depth in 10 months. Casing: 6¼ @ 8022 ft.
JAPAN			
Nippon Oil Co.'s Kinsui 32, Kinsui field, Formosa.	11,504	Drilling	Deepest test outside U. S. A. Still drilling. Casing: 6⅝ @ 10,467 ft.; 8⅝ @ 7420 ft.
MEXICO			
Penn.-Mex. Fuel Co.'s Jardin 35, at Alamo, State of Vera Cruz	10,585	August, 1931	Dry hole. First 10,000 ft. test drilled outside U. S. A. Holder of world's depth record for nearly two years. Casing: 22 @ 190 ft.; 16 @ 2236 ft.; 13⅜ @ 2735 ft.; 9⅝ @ 5200 ft.
Metlal Pet. Co.'s Metlaltoyica 1, Mena, State of Puebla	10,400	Dec., 1936	Dry hole. Second 10,000 ft. test in Mexico.
ROUMANIA			
Credit Minier S. A. R. Chitorani 1, at Ploesti	11,092	July, 1934	Dry hole. Until recently was deepest test outside U. S. A. First 11,000 ft. perforating job. Perforated 10,727 to 11,021 ft. Casing: 16 @ 594; 8⅝ @ 7977 ft.; 5¾ and 5½ combination liner @ 11,021 ft.

curred mostly in the United States, but there have been 5 wells of more than 10,000-foot depths in 4 other countries. Mexico has furnished 2 of the 10,000-foot tests, and Iran, Japan, and Roumania 1 each. However, no commercial production has been established yet below 10,000 feet outside the United States.

Deepest of the tests outside the United States, and in the running for setting a new world's record for deep drilling, is a Japanese well. At the beginning of the new year, Nippon Oil Company's Kinsui 32, Kinsui field, Formosa, was drilling at 11,504 feet, with 6⅝-inch casing cemented at 10,467 feet.

The second greatest depth reached in drilling outside the United States was the 11,092 footmark set by a Roumanian well in July, 1934.

The 10,000-foot test in Iran (Persia) and the 2 of that classification in Mexico stopped short of the 11,000-foot level. Mexico's first 10,000-foot test, Penn-Mex Fuel Company's Jardin 35, at Alamo, state of Vera Cruz, was the holder of the world's depth record for nearly 2 years, after reaching 10,585 feet in August, 1931. For 3 years it was distinguished as the only 10,000-foot test outside the United States.

Deep Drilling Areas

While the United States has furnished most of the 10,000-foot drilling so far, or 80 out of a total of 85 of the 10,000-foot wells in the world, a large proportion of the U. S. ultra deep drilling, as well as all the 10,000-foot production, has been on the Louisiana-Texas Gulf Coast and in California.

The whole Gulf Coast has accounted for 50 of the 85 wells 10,000 or more feet deep, or for about 60 percent of the world total. The Louisiana division of the Gulf Coast alone has furnished 34 wells 10,000 feet deep, or 40 percent of the world total. The Texas Gulf Coast accounts for 16 of the ultra deep ones.

California has had 18 wells drilled below 10,000 feet.

Aside from the previously mentioned 5 wells drilled below 10,000 feet in countries outside the United States, 10,000-foot tests also have included the following: 2 in North Louisiana, 4 in Oklahoma, 3 in South - Southwest Texas, and 3 in West Texas.

10,000-Foot Fields

The fact 85 wells have been drilled below 10,000 feet gives a hint that encouragement has been offered, meanwhile, in the form of production from great depths.

At the beginning of 1938 there were 8 fields in the United States yielding oil from below 10,000 feet, including 5 in Coastal Louisiana, 2 in California, and 1 on the Texas Gulf Coast. Those in South Louisiana included Bateman Bay, St. Mary Parish; Horseshoe Bayou, St. Mary Parish; Lirette, Terrebonne Parish; Jeanerette, St. Mary Parish; and La-

Wells Drilled Below 10,000 Feet In the United States

California

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc.
Completed (As of January 1, 1938)			
Superior Oil Co. and Union Oil Co.'s Kern Land 8, near Ten Section, Kern Co.	12,618	July, 1937	Unproductive deep test. Deepest in California. Second deepest in world. Casing: 13⅜ @ 1347 ft.; 7 @ 10,380 ft.
General Petroleum Corp.'s Berry 1, Belridge, Kern Co.	11,377	June, 1934	Unproductive deep test. Once deepest test in world. First 11,000 ft. test. Casing: 20 @ 728; 13⅜ @ 4534 ft.; 8⅝ @ 7752 ft.; 6⅝ @ 9717 ft.; 4½ liner @ 11,377 ft. with 7-ft. gap at 9623–9616 ft.
Union Oil Co.'s Kernco 1-34, Rio Bravo area, Kern Co.	11,302	Nov., 1937	Deepest producing well in world. Completed for 2400 bbls. 39.6 gravity oil dailyNov. 4, 1937. Casing: 6⅝ @ 10,248 ft.
Union Oil Co.'s (formerly North Kettleman Oil & Gas Co.'s) Lillis-Welsh 1, Kettleman Hills, Kern Co.	11,147	Sept., 1936	Dry hole. Strong pressures encountered. Casing: 18⅝ @ 1087; 11¾ @ 6710; 8⅝ @ 9081 ft.; 6⅝ @ 10,813 ft.
Tide Water Associated Oil Co.'s McGonigle 12, Ventura Ave., Ventura Co.	10,569	Jan , 1937	Oil well. When completed Jan. 17, 1937 for 530 bbls. was deepest producing well in world. Casing: 18 @ 848; 13⅜ @ 6018 ft.; 9 @ 8102 ft.; 5¾ @ 10,077 ft. and 607 ft. of 4 @ 10,566 ft.
Union Oil Co.'s Callendar 50, Dominquez field, Los Angeles Co.	10,435	May, 1937	Unproductive from bottom. Casing: 8⅝ @ 6860 ft.; 6⅝ @ 10,050 ft. Plugged back to 7574 ft.; completed for 200 bbls.
Western Gulf Oil Co.'s Bradley 1, Santa Maria, Santa Barbara Co.	10,296	July, 1932	Dry hole. Was deepest test in U. S. A. and second deepest in world. Casing: 16 @ 853 ft.; 9 @ 4706 ft.; 5¾ @ 5990 ft.
Kettleman North Dome Assn.'s 56-8-Q, Kettleman Hills, Kern Co.	10,249	June, 1935	Plugged back to less than 10,000 ft. and placed on production. Casing: 20 @ 1200 ft.; 13⅜ @ 6847 ft.; 9⅝ @ 8304 ft.
Associated Oil Co.'s Lloyd 137, Ventura Ave. field.	10,060	Oct., 1937	Oil well; initial production 1000 bbls. daily.
Chanslor-Canfield-Midway Oil Co.'s Hobson A-2, Rincon, Ventura Co.	10,030	May, 1931	Unproductive deep test. First ever drilled to 10,000 ft. Casing: 18⅝ @ 795 ft.; 11¾ @ 4326 ft.; 8⅝ @ 6640 ft.; 5⅝ @ 7479 ft.; 4 inch liner 8126 ft.
The Texas Co.'s K. C. L. C-11-49, Kern Co.	10,014	Oct., 1936	Unproductive. Casing: 13⅜ @ 900; 9⅝ @ 8069 ft.
Drilling (As of January 1, 1938)			
Continental Oil Co.'s K. C. L. A-2, Wasco area wildcat, Kern Co.	11,900	.....	May go below 12,000 ft. Casing: 7 @ 11,570 ft.
Kettleman North Dome Association's 4-18-J, Kettleman Hills.	11,746	.....	Fishing for stuck drill pipe. Casing: 600 ft. of 16 inch; 9⅝ @ 8387 ft.; 6⅝ @ 10,217 ft. Well was deepened after yielding water with 1210 bbls. 46.7 gravity oil daily from 10,753 ft.
Union Oil Co.'s Bell 100, Santa Fe Springs field, Los Angeles Co.	11,314	.....	May become deepest producing well in world. Swabbing indicates well can yield 100 bbls. 28 gravity oil daily. Casing: 8⅝ @ 7427 ft., 6⅝ @ 10,217 ft.; 3½ @ 11,215 ft.
Standard Oil Co.'s Morris 1, Trico area, Tulare Co.	11,200	.....	No showings reported. Last casing string: 9 @ 8624 ft.
Superior Oil Co.'s Huffman 5, Kettleman Hills, Kern Co.	10,400	.....	Yielded gassy mud from 10,058–10,301 ft. Is old well deepening. Fishing for twisted-off drill pipe. Casing: 7 @ 10,086 ft.
Seaboard Oil Corp. & Tide Water Associated Oil Co.'s 1-C, Wasco area, Kern Co.	10,213	.....	Shut down. Casing: 7 @ 9148 ft.
Arkelo Pet. Co.'s Arkelo 1, Lerdo area, Kern Co..	10,056	.....	Shut down. Casing: 13⅜ @ 726 ft.

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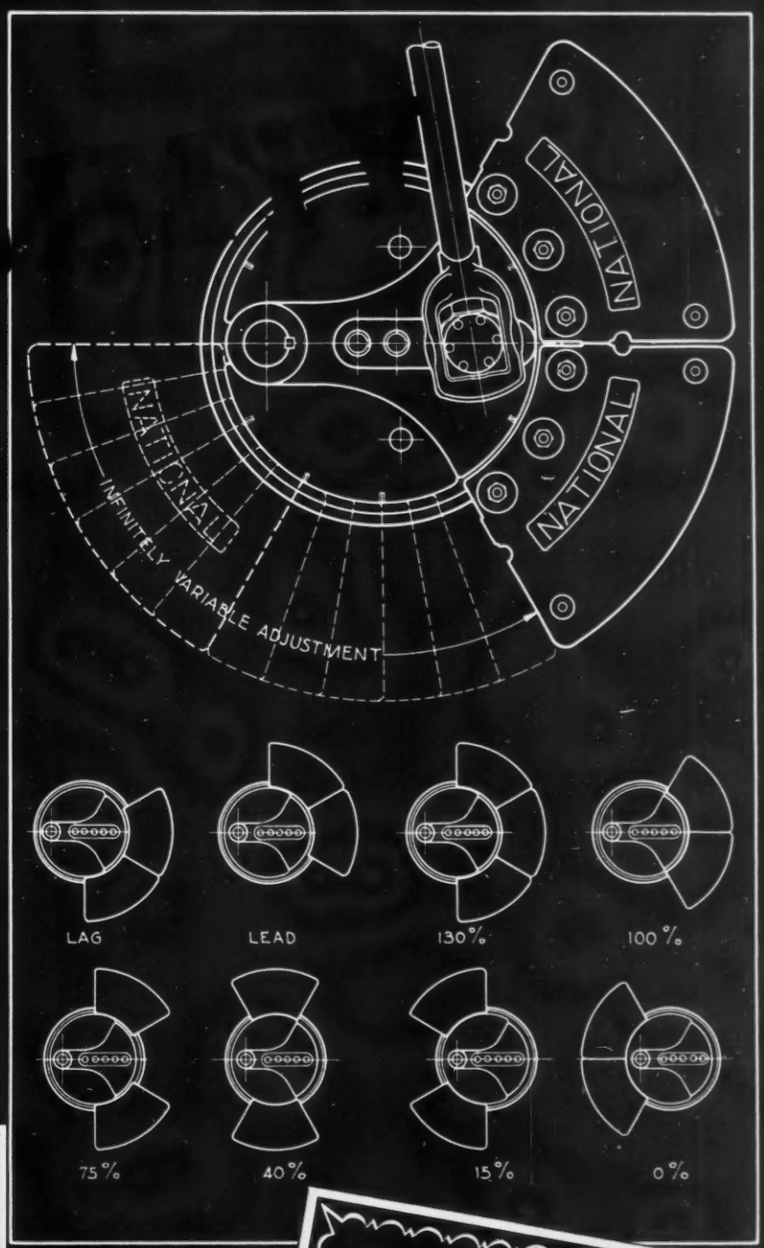

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fitte, Jefferson Parish. The 10,000-foot fields of California include Rio Bravo, Kern County, and Ventura Avenue, Ventura County. Old Ocean, Brazoria County, is the 10,000-foot field of the Texas Gulf Coast.

Deepest Producnig Well

As 1937 drew toward the close, the deepest producing well in the world was Union Oil Company's Kernco 1-34, Rio Bravo field, Kern County, California. It was completed in November, 1937, for 2400 barrels of 39.6 gravity oil production daily from 11,302 feet.

Title Surrendered

Earlier in 1937 there had been temporary production, originally regarded as commercial, from a somewhat greater depth. Humble Oil & Refining Company's Ellender 1, Lirette field, Terrebonne Parish, Louisiana Gulf Coast, was completed in May, 1937, flowing 40 barrels of 39 gravity oil an hour, or at the rate of 960 barrels daily, through a ¼-inch choke, from sand at 11,620-11,630 feet, after plugging back from 12,165 feet. Although it continued to produce for some time, the well subsequently began yielding some salt water along with the oil, and it finally was plugged back again and re-completed as an oil well at 10,525 feet. Thus that well in South Louisiana has definitely lost its former distinction as the world's deepest producing well.

New Aspirant

Moreover, the present title holder

Wells Drilled Below 10,000 Feet In the United States—(Continued)

Louisiana

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc.
NORTH LOUISIANA			
R. W. Norton's Payne 1, Caddo Parish.	10,344	Drilling	
Gulf Oil Corp.'s Rhymes 15, Richland Parish....	10,001	Early 1937	First 10,000 ft. test in North Louisiana.
SOUTH LOUISIANA **Completed (As of January 1, 1938)**			
The Texas Co.'s Bateman Lake 1, Bateman field, St. Mary Parish.	11,879	Dec., 1937	Second deepest producing well in world. Deepest producing well on Gulf Coast. Completed as oil well at 10,900–10,905 ft. after plugging back. Discovered second 10,000 ft. field in St. Mary Parish. Casing: 18⅝ @ 60 ft.; 13⅜ @ 1742 ft.; 7⅝ @ 10,515 ft.; 5 @ 11,266 ft.
The Texas Co.'s Horseshoe Bayou 1, Horseshoe Bayou field, St. Mary Parish.	12,261	May, 1937	Third deepest producing well in world. Made 1152 bbls. 39 gravity oil; perforations at 10,863–10,873 ft. Fifth in world to reach 12,000 ft. Third deepest in world. Blew out May 20, 1937. burned 1 hr., bridged. Casing: 17⅝ @ 59 ft.; 13⅜ @ 1496 ft.; 7⅝ @ 10,975 ft.
Continental Oil Co.'s Hebert 1, Abbeville, Vermilion Parish.	12,216	Dec., 1936	Productive at 7666 ft. after plugging back. Fourth deepest test in world. Second in Louisiana. Second 12,000 ft. hole. Second longest casing string. longest at time. Strong pressure 12,210 ft. Spudded April, 1935. Casing: 18⅝ @ 248 ft.; 13⅜ @ 1882 ft.; 7 @ 10,947 ft.; 5 @ 11,795 ft.
Humble Oil & Refining Co.'s Ellender 1, Lirette field, Terrebonne Parish.	12,165	May, 1937	Now producing from 10,525 ft., after plugging back. Was world's deepest producing well. Flowed 1000 bbls. choked after plugging back to 11,620 ft. First 11,000 ft. producing well. Seventh to produce oil below 10,000 ft. World's deepest perforating job at 12,014 ft. World's deepest wire line coring job. Longest casing string in world, the first below 12,000 ft. Longest string of 9⅝ inch ever run. Fourth well to reach 12,000 ft. Casing: 26 @ 260 ft.; 13⅜ @ 2824 ft.; 9⅝ @ 8735 ft.; 7 @ 12,097 ft.
Stanolind Oil & Gas Co.'s Stovall 1, South Abbeville, Vermilion Parish.	12,128	Jan., 1937	Dry hole. Third test to reach 12,000 ft. Sixth deepest ever drilled. Record for amount of open hole, having had 10,148 ft. uncased. Casing: Only surface pipe at 1980 ft.
The Texas Co.'s State Bayou Norman 1, Lafitte field, Jefferson Parish.	12,115	Nov., 1937	Tried to blow out at 12,069 ft. Plugged back; perforated 9530–9630 ft., made 1736 bbls. daily. Casing: 18⅝ @ 102 ft.; 13⅜ @ 1931 ft.; 7⅝ @ 9674 ft.
Continental Oil Co.'s Brookshire 1, Abbeville field, Vermilion Parish.	11,909	Sept., 1937	Blew out at 11,909 ft., made 15,000 bbls. salt water daily; plugged back and perforated in sand at 7884–7890 ft., as oil well. Casing: 18⅝ @ 237 ft.; 13⅜ @ 2125 ft.; 7⅝ @ 11,342 ft. (longest string 7⅝ in world).
The Texas Co.'s State Lake Barre 37, Lake Barre, Terrebonne Parish.	10,959	April, 1937	Productive at 3743 ft. after plugging back. Thirteenth 10,000 ft. test in Louisiana Coast, 31st in world, and sixth for this company. Casing: 9⅝ @ 8063 ft.
The Texas Co.'s Rigoletts 5, Lafitte field, Jefferson Parish.	10,942	Jan., 1937	Completed Jan. 7, 1937 for 1636 bbls., choked after plugging back to 10,244 ft. Casing perforated 10,030–10,110 ft. First commercial producer in world below 10,000 ft. Spudded May, 1936. Casing: 13⅜ @ 1353; 7⅝ @ 10,244 ft.
Barnsdall Oil Co.'s Stark, Dibert & Brown 1, north of Gibson field, Terrebonne Parish.	10,777	Nov., 1937	Dry hole. Casing: 10¾ @ 2475 ft.
Shell Petroleum Corp.'s Jarnigan 1, Roanoke, Jefferson Davis Parish.	10,750	Sept., 1935	Dry hole. Casing: 20 @ 64 ft.; 13⅜ @ 3518 ft.; 9⅝ @ 7476 ft.; 7 @ 9772 ft.
Shell Petroleum Corp.'s Pelican 1, Gibson field, Terrebonne Parish.	10,727	Aug., 1937	Dry hole. Casing: 16 @ 178 ft.; 10¾ @ 2499 ft.
The Texas Co.'s Vermilion Bay 1, Vermilion Bay area, Iberia Parish.	10,622	March, 1937	Dry hole.
Humble Oil & Refining Co.'s Thomas 1, Roanoke, Jefferson Davis Parish.	10,583	Sept., 1935	Dry hole. Casing: 16 @ 186 ft.; 10¾ @ 2857 ft.; 7 @ 9619 ft.
Herton Oil Co.'s Banta and Roanes 1, Jeanerette field, St. Mary Parish.	10,480	Oct., 1937	First 10,000 ft. producer in field; oil sand 10,272–10,292 ft. Casing: 13⅜ @ 1400 ft.; 7 @ 9768 ft.; 5 @ 10,480 ft.
The Texas Co.'s Rigoletts 7, Lafitte field, Jefferson Parish.	10,406	July, 1937	Initially produced 1382 bbls. oil daily from 10,210–10,240 ft. Casing: 13⅜ @ 1935 ft.; 7⅝ @ 10,406 ft.
The Texas Co.'s Lafitte 6, Lafitte field, Jefferson Parish.	10,368	May, 1937	Completed for 1050 bbls. daily through choke from 10,018 ft.
Superior Oil Producing Co.'s Duplantier 1, Baton Rouge area, East Baton Rouge Parish.	10,360	Oct., 1935	Dry hole. Casing: 13⅜ @ 1443 ft.; 9⅝ @ 7744 ft.
The Texas Co.'s Lafitte 7, Lafitte field, Jefferson Parish	10,275	Nov., 1937	Perforated and completed at 10,065–10,092 ft. Casing: 18⅝ @ 101 ft., 13⅜ @ 2023 ft.; 9⅝ @ 10,275 ft.

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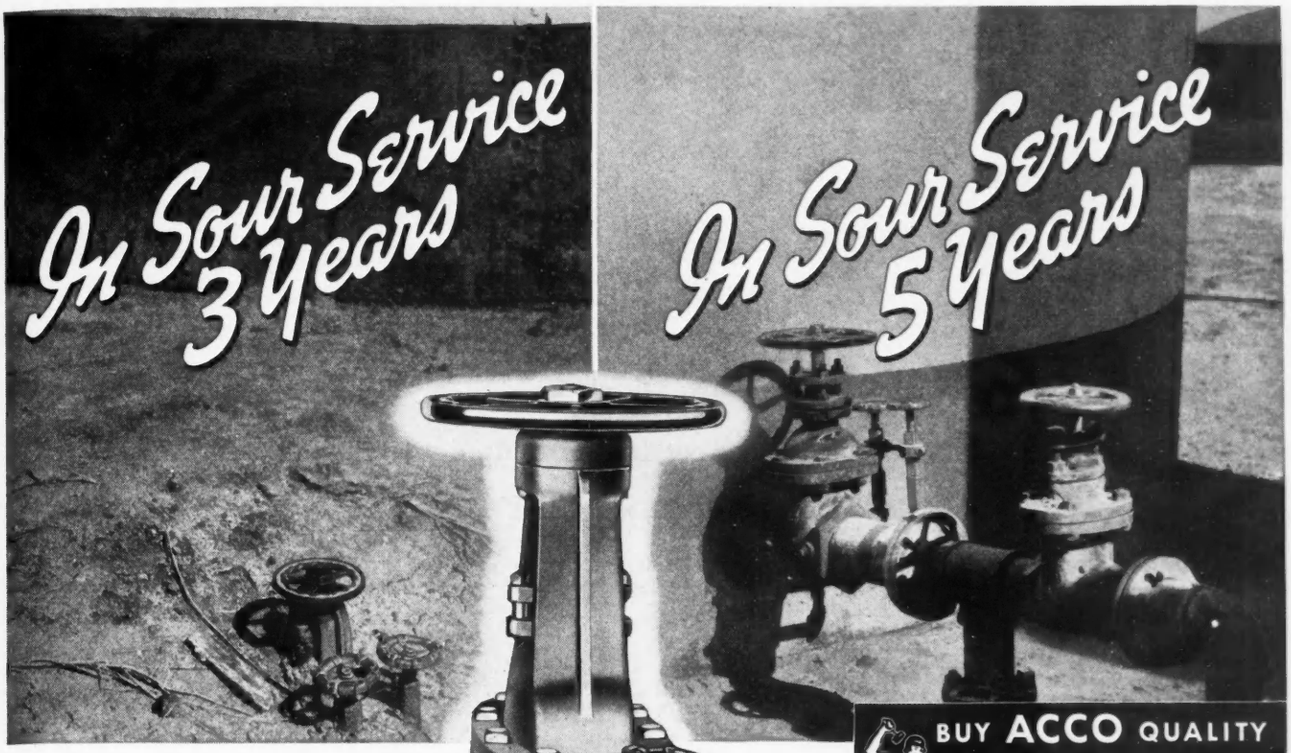

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This service record is a tribute to the lubricant seal of these valves. Reading-Pratt & Cady Lubrotite Valves remain tight regardless of service conditions.

The unique method of applying a lubricant seal through a duct system, absolutely seals the closure and prevents wear by coating the seat surfaces with a corrosion resistant film.

Reading-Pratt & Cady Lubrotite Valves are recommended where corrosive fluids are employed and where leak-proof service is essential.

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for deep production, at Rio Bravo field, California, barely clings to its record. Another California well was threatening, as 1938 dawned, to take for itself the record as the world's deepest producing well, although that aspirant was owned by the same company as the title holder. This prospective new record producer was Union Oil Company's Bell 100, at Santa Fe Springs field, Los Angeles County, California, 11,314 feet deep. At the beginning of this year the well was being swabbed and was yielding 28 gravity clean oil. When swabbing was temporarily halted, the fluid would rise at rates indicating that the well would yield about 100 barrels of oil a day.

10,000-11,000 Foot Fields

While the Rio Bravo field, California, was the only one in the world, at the beginning of 1938, producing from below 11,000 feet, two others were almost that deep, and altogether, over half a dozen were producing from depths between 10,000 and 11,000 feet.

Ranking just after the Rio Bravo field were two fields of South Louisiana. In the Bateman Bay field, St. Mary Parish, The Texas Company completed Bateman 1 in December, 1937, as the second deepest producing well in the world. It produced from 10,900-10,905 feet, after being plugged back from 11,879 feet. In the same parish, in the Horseshoe Bayou field, The Texas Company previously com-

Wells Drilled Below 10,000 Feet In the United States—(Continued)

Louisiana—(Continued)

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc.
SOUTH LOUISIANA—(Cont'd) **Completed (As of January 1, 1938)**			
Humble Oil & Refining Co.'s Continental Fur 1, Castell area, Terrebonne Parish.	10,254	Sept., 1936	Dry hole. Casing: 13⅜ @ 3004 ft.
Shell Petroleum Corp.'s Realty 1, Houma area, Terrebonne Parish.	10,157	March, 1936	Dry hole. Casing: 20 @ 72; 13⅜ @ 2486 ft.
Pure Oil Co.'s Mallard Bay 1, Cameron Parish.	10,146	March, 1937	Dry hole. Casing: 18⅝ @ 1499 ft.; 13⅜ @ 4604 ft.; 9⅝ @ 7906 ft.
The Texas Co.'s Madison Realty Co. 2, Lafitte field, Jefferson Parish.	10,120	Oct., 1937	Completed at 10,018–10,056 ft. Casing: 20 @ 107 ft.; 13⅜ @ 1861 ft.; 7⅝ @ 10,120 ft.
The Texas Co.'s Lafitte 4, Lafitte field, Jefferson Parish.	10,092	July, 1937	Oil well at 10,059–10,091 ft. Casing: 13⅜ @ 1962 ft.; 7⅝ @ 9363 ft.; 5¾ @ 10,092 ft.
Pan American Prod. Co.'s Lawes 4, Charenton field, St. Mary Parish.	10,066	Sept., 1937	Dry hole. Casing: 16 @ 150 ft.; 10¾ @ 1900 ft.; 7 @ 8586 ft.
The Texas Co.'s Lafitte 5, Lafitte field, Jefferson Parish.	10,057	Sept., 1937	Oil well at 10,020 ft. Casing: 13⅜ @ 1913 ft.; 7⅝ @ 9920 ft.; 5¾ @ 10,057 ft.
Humble Oil & Refining Co.'s Nordyke 1, South Crowley area, Acadia Parish.	10,056	April, 1937	Dry hole. Casing: 20 @ 152 ft.; 13⅜ @ 2130 ft. 9⅝ @ 6850 ft.
The Texas Co.'s R. C. Milling 1, Lafitte field, Jefferson Parish.	10,040	Jan., 1937	Completed for 1550 bbls., choked at 9941–10,040 ft. Was second 10,000 ft. commercial well in world and second at Lafitte.
Superior Oil Producing Co.'s Martinez 1, Bosco field, St. Landry Parish.	10,002	Jan., 1935	Dry hole. First 10,000 ft. test in Louisiana. Casing: 13⅜ @ 226 ft.; 7 @ 9325 ft.
SOUTH LOUISIANA **Drilling (As of January 1, 1938)**			
Amerada Pet. Corp. & La. Land & Explor. Co.'s South Coast Corp. 1, Raceland area, La Fourche Parish.	10,314	.....	Casing: 2 @ 221 ft.; 13⅜ @ 2700 ft.; 9⅝ @ 7642 ft. Will set 7 inch. Promises to to open new field. Oil sands at 7238 and 10,185 ft.
Fohs Oil Co. and Pilgrim Explor. Co.'s State 3, Lake Long field, La Fourche Parish.	10,300	.....	Casing: 10¾ @ 2730 ft.; 7 @ 9477 ft. Active. Gas sands at 10,083 to 10,117 ft. Also reported shows below latter depth.
The Texas Co.'s Rigoletts 8, Lafitte field, Jefferson Parish.	10,285	.....	Casing: 13⅜ @ 1900 ft.; 7⅝ @ 10,285 ft. Will perforate, in regular pay sand.
Humble Oil & Refining Co.'s Sarber 1, South Crowley area, Acadia Parish.	10,272	.....	Casing: 20 @ 151 ft.; 13⅜ @ 2086 ft.; 9⅝ @ 7550 ft. Tried blow out at 10,191–10,201 ft.; fishing 10,272 ft.
Superior Oil Producing Co.'s Larcade 5, Bosco field, St. Landry Parish.	10,216	.....	Casing: 9⅝ @ 7830 ft.; 7 @ 9527 ft. Was a producer at 7845 ft.; drilled deeper as exploratory test to 10,216 ft. Plugged back to 9527 ft.; set casing; drilling deeper.

Oklahoma

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc.
Completed (As of January 1, 1938)			
Denver Producing & Refining Co.'s A-Dah-Noe 1, Binger, Caddo Co.	11,230	July, 1934	First 10,000 ft. producer, but not considered commercial. Made 50 bbls. daily on gas lift from 10,100 ft. Was second 11,000 ft. test in world. Casing: 15½ @ 126; 9 @ 6238 ft.; 6⅝ @ 9922 ft.
Denver P. & R. Co.'s Sah-Cam 1, Caddo Co.	10,084	March, 1936	Unproductive. Third 10,000 ft. test in state. Casing: 9⅝ @ 7586 ft.; 7⅝ @ 8550 ft.
Mid-Kansas Oil & Gas Co. (now Ohio Oil Co.) and Ramsey Petroleum Co.'s Preston-Culp 6, Cement field, Caddo Co.	10,079	Oct., 1931	Unproductive. First 10,000 ft. test east of Rocky Mountains. Record depth casing string at time. Second 10,000 ft. test in world. Casing: 12½ @ 64 ft.; 9 @ 5515 ft.; 6⅝ @ 9777 ft.
Drilling (As of January 1, 1938)			
Coline Oil Co.'s Johnson 1, Stephens Co.	10,001	.....	Fourth 10,000 ft. test drilled in state. Reached depth Oct. 6, 1937. Plugged back to 9164 ft. Casing: 15½ @ 154 ft.; 9 @ 6470 ft.; 7 @ 8975 ft. Operators were milling, after 7 inch collapsed at 8689 ft.

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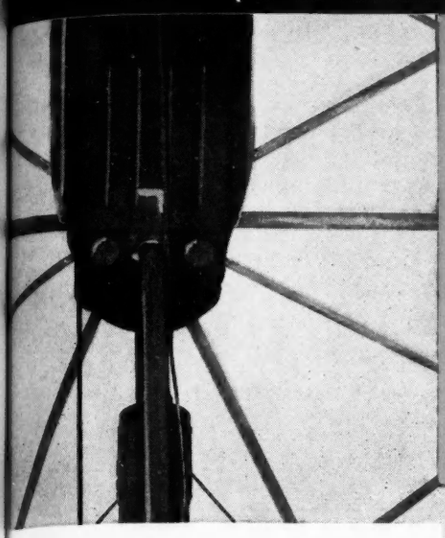
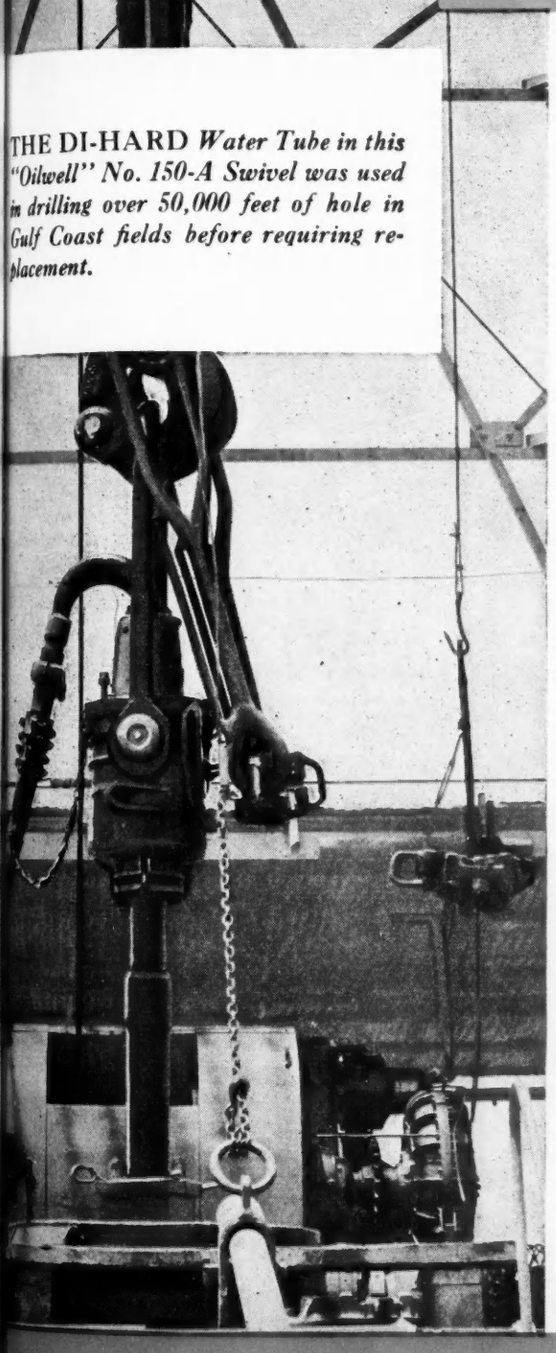
"OILWELL"

BUILDS RUGGED SWIVELS

The kind that drillers like



THE DI-HARD *Water Tube in this "Oilwell" No. 150-A Swivel was used in drilling over 50,000 feet of hole in Gulf Coast fields before requiring replacement.*



"OILWELL" Swivels give trouble-free service. There are many reasons. Here are three:

DI-HARD Water Tube—

- ★ is extremely hard—over 600 Brinell
- ★ is highly resistant to abrasion
- ★ has a very low coefficient of friction
- ★ outwears many times the best heat-treated steel tubes . . . packing lasts much longer

Type "A" Water-Tube Packing—

- ★ requires no adjustment
- ★ prevents leakage under all pressure and temperature conditions
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Extra-heavy, heat-treated Goose Neck with reinforced Long-Radius Bend—

- ★ reduces flow restriction
- ★ gives much longer service than conventional type

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NO. 100

100 TONS AT 100 R. P. M.

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150 TONS AT 150 R. P. M.

DIAMOND 1862 OILWELL 1937 JUBILEE

75 years of progress

OIL WELL SUPPLY COMPANY

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"OILWELL"

pleted Horseshoe Bayou 1, by perforating casing at 10,863-10,873 feet, after plugging back from 12,-261 feet. The well initially produced 1152 barrels 39 gravity oil daily.

The fourth deepest producing field of the world at the year's beginning was Old Ocean, Brazoria County, Texas Gulf Coast. That field had several wells producing from below 10,000 feet, the established pay zones ranging down to 10,650 feet. The deep pay is being further developed, moreover.

The fifth deepest producing area was the previously mentioned Lirette field, now productive at 10,-525 feet, following the plugging back of the well that temporarily ranked as the world's deepest producer.

Not far behind were two other South Louisiana fields. Jeanerette, St. Mary Parish, offered production at 10,292 feet. Lafitte field, Jefferson Parish, like Old Ocean, is one of the more extensively developed 10,000 foot fields, having over half a dozen wells producing from depths between 10,000 and 10,240 feet.

Also among the 10,000 foot fields is Ventura Avenue, California, production having been established slightly below that depth.

Wells Drilled Below 10,000 Feet In the United States—(Continued)

Texas

WELL AND LOCATION	Depth, Feet	Date Completed	REMARKS: Records Established, Casing Set, Etc.
SOUTH TEXAS			
Amerada Petroleum Corp.'s Halff & Oppenheimer 8, Pearsall, Frio County.	10,471	.....	Shut in Jan. 1, 1938, after plugging back for completion in upper formations. Deepest in South Texas. Casing: 20 @ 38 ft.; 13⅜ @ 235 ft.; 9⅝ @ 6120 ft.; 7 @ 10,335 ft.
Shell Petroleum Corp.'s Yturria 1, Willacy Co.	10,286	August, 1937	Deepest in South Texas Gulf Coast. Completed originally as oil well at 7662 ft.; deepened; then abandoned. Casing: 20 @ 120 ft.; 9⅝ @ 7625 ft.
Amerada Petroleum Corp.'s Halff and Oppenheimer 2, Pearsall, Frio Co.	10,050	Nov., 1934	South Texas' first 10,000 ft. test. Plugged back 3925 ft. and opened Pearsall field. Casing: 15½ @ 289 ft.; 9⅝ @ 4952 ft.
TEXAS GULF COAST **Completed (As of January 1, 1938)**			
Continental Oil Co.'s Robbins 2, Citrus Grove, Matagorda Co.	11,612	May, 1937	Dry hole. First well on Texas Gulf Coast to go below 11,000 ft., and deepest so far in area. Drilled much heaving shale. Casing: 20 @ 230 ft.; 16 @ 2665 ft.; 11¾ @ 6420 ft.; 8⅝ @ 8910 ft.
Harrison & Abercrombie's Bernard 4, Old Ocean field, Brazoria Co.	10,775	July, 1937	Third 10,000 ft. oil well in field. Producer at 10,395–10,401 ft.; 290 bbls. daily. Casing: 20 @ 58 ft.; 13 @ 1405 ft.; 7 @ 10,415 ft.
Harrison & Abercrombie's Larson 1, Old Ocean field, Brazoria Co.	10,751	Sept., 1937	Oil well at 10,635–10,650 ft.; 275 bbls. daily. Fourth 10,000 ft. producer for field. Casing: 13⅜ @ 1482 ft.; 7 @ 10,751 ft.
Harrison & Abercrombie's Smith 1, Old Ocean field, Brazoria Co.	10,638	Nov., 1937	Oil well at 10,470–10,480 ft.; 275 bbls. daily. Fifth 10,000 ft. producer in field. Casing: 20 @ 60 ft.; 9 @ 7060 ft.; 5 @ 10,630 ft.
Superior Oil Producer Co.'s Butler 1, Bammel prospect, Harris Co.	10,519	August, 1937	Gas well at 6170–6175 ft. Casing: 13⅜ @ 1400 ft.; 7 @ 9898 ft.
Shell Petroleum Co.'s Stewart 1, Hitchcock Prospect, Galveston Co.	10,460	Oct., 1936	Dry hole. Texas Gulf Coast first test to reach 10,000 ft. Casing: 13⅜ @ 2473 ft.; 9⅝ @ 7707 ft.
Harrison & Abercrombie's Bernard River 3, Old Ocean field, Brazoria Co.	10,437	March, 1937	Oil well at 10,263–10,293 ft.; 300 bbls. daily on choke. First 10,000 ft. producer in Texas, fourth in world. Second Texas Gulf Coast test to reach 10,000 ft. Flowing pressure of 3900 lbs. Casing: 10 @ 40; 13 @ 268 ft.; 9 @ 6070 ft.; 7 @ 10,004 ft.
Sun Oil Co.'s J. Ward Estate 1, La Belle prospect, Jefferson Co.	10,147	Dec., 1937	Abandoned. Showed dry gas at 10,005 ft.; plugged back, unproductive. Casing: 13 @ 1254 ft.; 9⅝ @ 8538 ft.; 7 @ 9951 ft.
Beaty, Bowles & Borsodie's Truska 1, Algoa, Brazoria Co.	10,083	March, 1937	Dry hole. Third 10,000 ft. test in Texas Gulf Coast. eighth in Texas. Casing: 18⅝ @ 640 ft.; 9 @ 6430 ft.
Harrison & Abercrombie's Bernard 1-A, Old Ocean field, Brazoria Co.	10,058	June, 1937	Discovery well; was completed at 8651 ft., killed, deepened, re-completed at 9827–9835 ft. for 258 bbls. daily, after plugging back from 10,058 ft. Casing: 10 @ 1358 ft.; 7 @ 8638 ft.; 5 @ 9845 ft.
TEXAS GULF COAST **Drilling (As of January 1, 1938)**			
Sun Oil Co.'s Bayshore Farms 1, Palacios field, Matagorda Co.	11,327	.....	Set 7 inch casing at 11,327 ft. Testing through perforations. Set 9⅝ @ 8320 ft.
Harrison & Abercrombie's Copeland 1, Old Ocean field, Brazoria Co.	11,130	.....	Casing: 13 @ 1490 ft.; 7 @ 10,300 ft. (stuck). Testing.
Skelly Oil Co.'s Cobb B-14, Van Vleck field, Matagorda Co.	10,262	.....	Casing: 18 @ 120 ft.; First 10,000 ft. exploratory test in field.
United North & South Dev. Co.'s Lambert 1, Wilson's Creek field, Matagorda Co.	10,128	.....	Casing: 7⅝ @ 8660 ft. Deepest in field.
Gulf Oil Corp.'s Moore 53, Orchard field, Fort Bend Co.	10,085	.....	Casing: 10 @ 1321 ft.; 5 @ 9460 ft. Deepest in field.
Harrison & Abercrombie's Fee 2, Old Ocean field, Brazoria Co.	10,009	.....	Casing: 20 @ 56 ft.; 13 @ 1500 ft.; 9 @ 6998 ft. Active.
WEST TEXAS			
Gulf Oil Corp.'s McElroy 103, Gulf-McElroy field, Upton Co.	12.786	May, 1935	World's deepest test. Unproductive. World's first 10,000 ft. casing string. First 12,000 ft. hole. Spudded March 21, 1933. Several shows below 10,000 ft. Plugged back to 3384 ft. Casing: 15½ @ 762 ft.; 10¾ @ 4017 ft.; 7⅝ @ 10,301 ft.
Humble Oil & Refining Co.'s Pollock-Gulf 1, Upton Co.	11,144	Nov., 1935	Dry hole. Second Texas test to reach 11,000 ft. Casing: 15½ @ 340 ft.; 10¾ @ 4338 ft.; 8⅝ @ 8728 ft.
John I. Moore, Loffland Bros. et al's McDowell 1, Glasscock Co.	10,906	Feb., 1936	Dry hole. Flowed 500 bbls. hot sulphur water at bottom. Small oil production for while after acidizing at 10,115 ft. Deepest acidizing job in world. Casing: 15½ @ 237 ft.; 11¾ @ 2186 ft.; 7⅝ @ 9470 ft.

'INCOR' HELPS

ON THOSE SOFT-FORMATION JOBS

EVER land a casing in a soft, unconsolidated formation—then squeeze the cement back into it? That calls for a thin slurry—but one that isn't weak. For a weak slurry won't do much good, even after you get it back. That is where 'Incor's high gel strength counts. Example:

For squeeze jobs, a leading company in the Clarkwood Field starts slurries thin, then ends up with a heavy mix. Example: 400 sacks of 'Incor' were pumped to 4800 ft. within an hour. Mix started at 13.8 lbs., increased gradually to 15 lbs. As cement started around, pump-pressure went from 300 lbs. to 1500 lbs. It got the job done successfully. Today it is one of the best producers in the Field.

Both 'Incor' and 'Starcor' pump freely and easily at 15 lbs. or higher. You don't have to thin them down, unless you want to do so on a squeeze job. Even then, high gel strength protects you. Use 'Incor'* in wells of moderate depth—use 'Starcor'* for deep wells, high temperatures and extra sulphate-water resistance. Both cements have controlled setting time—an inbuilt margin of safety in case of cementing delays. Your nearest dealer can give you immediate service. *Reg. U. S. Pat. Off.

TWO PORTLAND CEMENTS—BOTH MADE FOR OIL WELLS

USE 'STARCOR'—for deep wells, high temperatures or extra sulphate resistance.

USE 'INCOR'—for wells of moderate depth.

LONE STAR CEMENT CORPORATION

MAKERS OF LONE STAR CEMENT • 'INCOR' 24-HOUR CEMENT • 'STARCOR' CEMENT

Progress in Engineering

1937 advancements in exploration, drilling, production and pipe line practices and equipment to be improved in 1938

By BRAD MILLS
Associate Editor

THE petroleum industry faces 1938 with improved exploration, drilling production and pipe line practices and facilities. Advancements made in 1937 will be carried forward aggressively, and the attack on problems during 1938 will be even more varied and effective than in the past. Activity along every front should compare favorably with that recorded in 1937.

Reconnaissance Work Advanced

Reconnaissance work ahead of actual development will play an increasingly important role in field operations. Geology and geophysics have gained added recognition in every producing district. Experience and broader interpretations have widened the field of usefulness for both phases of preliminary work.

The analysis of gas in soil or surface formations has given good results in several districts, this procedure having been one of the newest developments in reconnaissance work. The escape and seepage of gas from deep oil-bearing formations is more extensive than is generally supposed, and small quantities of petroleum gas often work their way to the surface.

The soil gas analysis as a prospecting medium principally takes into consideration the nature of gases contained in samples of the soil. Shallow holes are drilled, and samples of the soil obtained from depths of 10, 15 or 20 feet. The soil samples are immediately placed in a tight container and sent to the laboratory for analysis.

During the early development of this exploration method, gas or vapor was drawn from the shallow holes and sent to the laboratory for analysis. That method was not entirely satisfactory, since the porosity of the soil permitted the entry of ordinary air into the hole. Some of the most important gases also had a tendency to stick or cling to the soil, and could not be obtained in representative quantities.

In searching for favorable gas shows, the heavier hydrocarbon gases are desired. The ethane, propane and butane gases usually are present above oil-bearing formations, while the more common methane gas is found everywhere. The presence of the heavier hydrocarbon gases calls for a close examination of the area. Oil fields have been indicated and found in several producing districts by gas seeps that could be heard or seen. The visible seeps were those observed in shallow bodies of water. Since some of the most conspicuous gas seeps have been audible, or visible in water, it is reasonable to suppose that lesser seeps may be found in abundance.

Gravity Meter Appears

The gravity meter, an instrument for determining mass distribution of formations, will be used on a commercial scale during the year. This instrument supposedly is not affected by higher formations nearby, and may be used in low areas immediately surrounded by hills. The work done by the gravity meter is similar to that done by the torsion balance, but the principles involved are different.

The electrical transient, an instrument for measuring and checking the conductivity of surface formations has been developed by a major Gulf Coast operator, and will be used on a commercial scale during 1938. The soil above an oil

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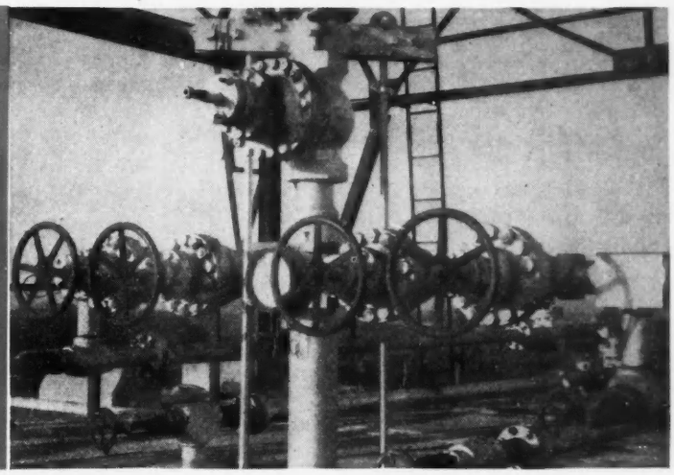

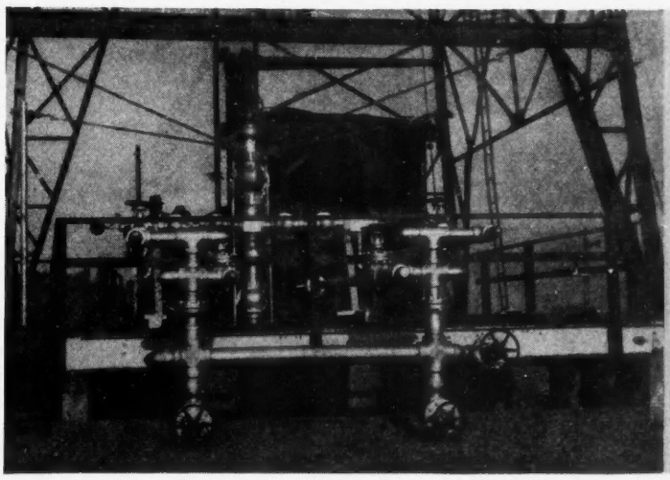

IT'S 100% SAFE!

We know and you know that Kerotest Drilling and Flow Line Valves are an absolute guarantee of safety and perfect control under all conditions of service —BUT DON'T STOP THERE—**follow through** your good judgment by specifying the equally well built Kerotest FORGED STEEL FITTINGS including HEAT TREATED RING FLANGE UNIONS, DROP FORGED CROSSES, TEES AND ELBOWS and last but not least, KEROTEST CONTROL CHOKES—the standard of precise oil flow control.

Remember all Kerotest Xmas Tree Fittings are not only subject to the same searching tests as the world famed Kerosene-pressure tested valves but also made of the same 100,000 pound test M.M. steel.

Thus in matching your Kerotest Xmas Tree Valves with genuine Kerotest Fittings you get the definite advantages of one standard of manufacture—one standard of testing—one standard of assembly and one standard of quality.

Why not centralize the responsibility 100 per cent with Kerotest and be 100 per cent safe. It's the logical thing to do.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PENNSYLVANIA

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field does not show the same conductivity as that in non-producing areas.

The magnetometer, torsion balance and seismograph, all standard geophysical instruments, will be extensively used through 1938. Geophysical methods will be applied to several districts for the first time, several important discoveries during 1937 having encouraged the use of this form of prospecting. In the flat districts of Illinois, California and the Rocky Mountains, geophysical work is gaining in favor.

Drilling Practices Improved

The most efficient drilling practices the petroleum industry has ever known will be carried forward. The past year was filled with progress, and several experimental practices will be placed on a commercial basis during 1938.

In the boiler and boiler feed arrangements, the tendency toward automatic control is marked, where natural gas or oil under pressure is available. Through the use of regulators and feed controls, fuel consumption is gauged by steam demands. Both the boiler feed water pumps and the fuel supply arrangement are built as units, and only a few connections are required when rigging up or removing equipment at each location. These units usually are built on heavy pipe skids, and their use has sharply reduced the rigging up time at each location.

Drilling equipment as a whole used during 1938 will be about the same in weight as that used during 1937. In the deep producing districts, the trend is toward heavier drilling equipment. In the shallow producing districts, light and more efficient drilling equipment is being used. Some of this equipment, however, has been made considerably heavier during the past year.

Portable rigs for shallow drilling have proved effective in several districts. The portability, low first cost, and limited depreciation of equipment of this type have been appreciated by operators who have no use for the heavier drilling equipment. The portable outfits are available in either rotary or cable tool types, and recently a combination rotary and cable tool outfit was developed. The light portable outfits are largely confined to drilling depths above 3000 feet.

Automatic Weight Control

An automatic feed and weight control has been developed for use under difficult drilling conditions. The control is essentially an independent unit, consisting of a V-8 engine driving a self-locking worm gear through a variable speed, reversible hydraulic transmission. A sprocket on the worm gear shaft connects to the line shaft on the draw works. The control either feeds or retrieves the pipe at any desired speed. The control system consists of three push switches mounted in a small box on the end of a portable cord. The box is hung on the draw works at the driller's usual position.

Coal-burning rotary drilling outfits are being used in Illinois, but aside from the unusual fuel feature, ordinary medium-weight equipment is used. Fuel oil and gas are most widely used with steam outfits in this district.

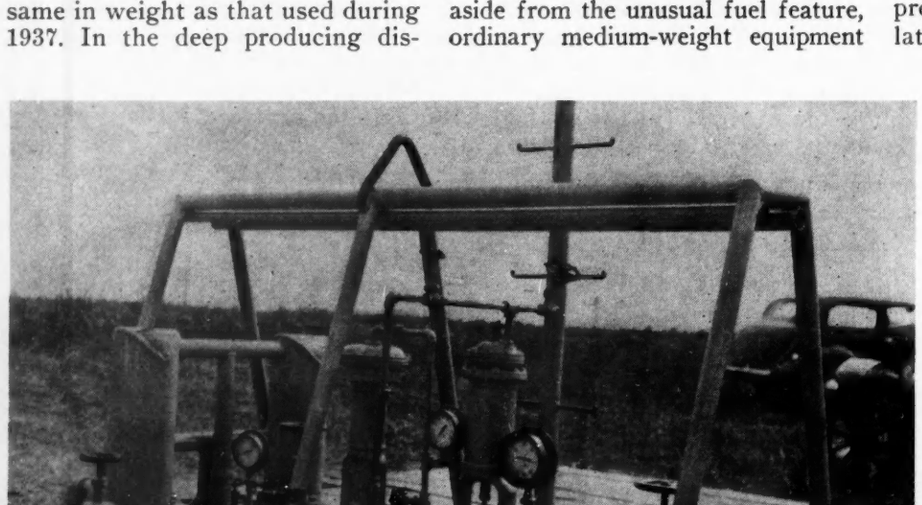
Mud Studies Continue

Progress in the use of drilling fluids will make possible more rapid and efficient drilling programs in every district. The realization several years ago that muds should be suited to conditions has carried through, and every large company has from two to four men who are capable of prescribing mud needs.

Careful and accurate testing of drilling fluids has become a necessity, especially in exploration and completion of wells in the deeper formations. The determination of density, viscosity, sand content, gelation, and pH of drilling fluids hold a new importance for 1938, and standard practices have been developed.

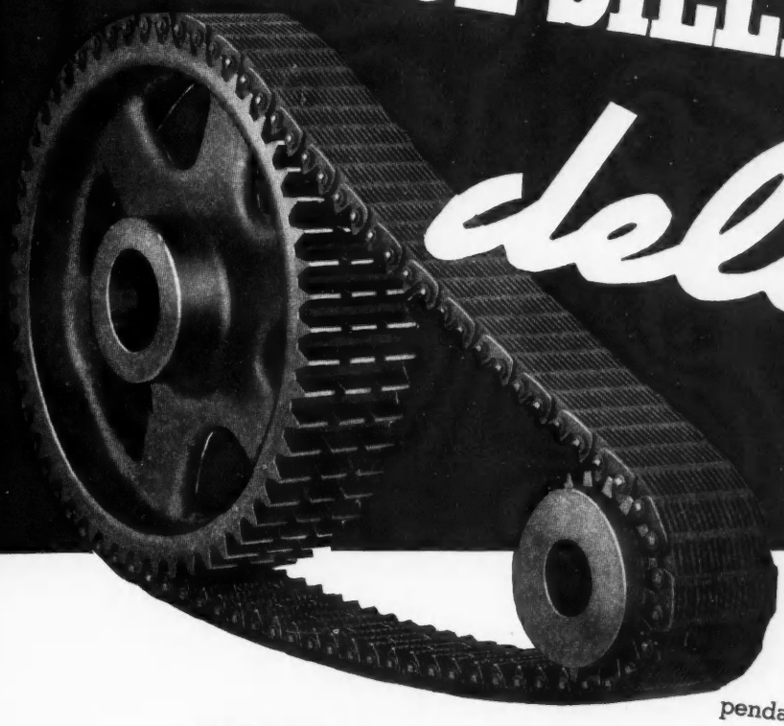
High mud temperatures encountered while drilling certain formations have been successfully controlled through the use of an original mud cooler. The cooler principally consists of a 20-foot section of 4-inch pipe with a series of slots cut along the underside, a series of baffles, a large steam turbine type fan or blower, and an arrangement of troughs. Lime formations often heat mud to an excessive temperature, and cooling before reuse is necessary.

The use of an improved mud circulating system has enabled a Gulf Coast drilling contractor to reduce the drilling time in a deep producing area. Better mud circulation was obtained by use of large



Automatic gas feed control for boilers has simplified firing

WHEN THE GOING GETS Tough... WATCH MORSE SILENT CHAIN deliver!



Morse Silent Chains are efficient, have greater tensile strength, greater load carrying capacity, cut down expensive shut downs—greater ruggedness and dependability—won't burn up.

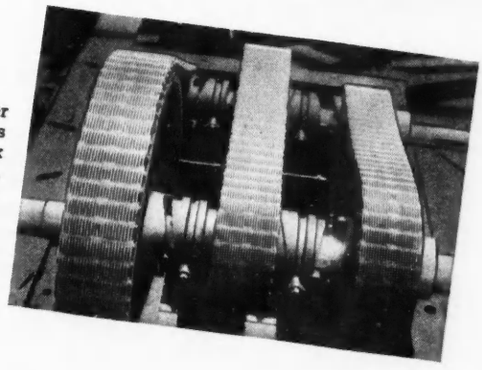
Instead of a few points of contact between the driving sprockets and the ordinary power transmitting chain there are hundreds of fingers of steel gripping the teeth all the way across the face.

Compared with belts, Morse Silent Chains take less space, wheels are smaller in diameter and width. Centers are adjustable and chain drives do not have to be put on endless.

The exclusive rocker joint construction of Morse Silent Chains reduces wear to a minimum, adds years of efficient operation to the drive, yet *costs no more than ordinary drives.*

Hundreds of Morse heavy duty drives from 50 to 500 H.P. have been giving efficient, satisfactory service for many years.

Write Morse at Ithaca for further information. Ask about the Morse "Barflex" a new type extra strong Morse chain especially adapted to the oil field.



The chain speed reducer shown at right utilizes three Morse Barflex chains 2" pitch, 8" wide. Use of Morse Chains in this reducer permits very compact arrangement and assures long life and complete reliability.

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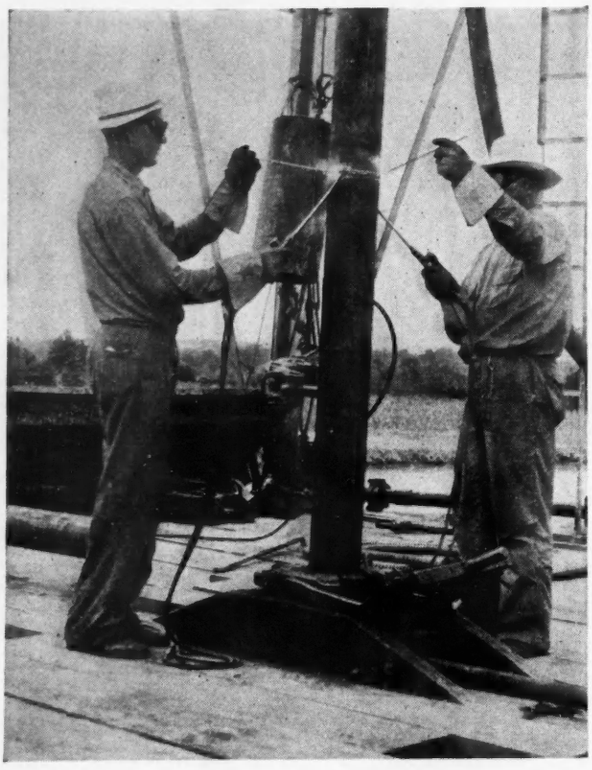

Welding of casing has become an important new field practice

openings in the mud circulating system, and by the reduction of friction of flow at the pump and elsewhere. Several companies and contractors will use less restricted flow openings during 1938.

The use of mud degassers holds possibilities, and two or three types of degassing methods are being used. One method of removing gas from the drilling fluid depends chiefly on the use of an elevated separator. The mud simply passes through the separator, and the gas is drawn off. Another degassing method that has been very successful employs a short "closed section" in the flow of the mud from the well. This closed section is a round container that is equipped with agitators that help to release the gas. A heavy vacuum is maintained on the mud during its flow through the closed section, and most of the gas is drawn off.

Use of the correct mud, constant conditioning, and maintenance of an efficient mud circulating system will bring new drilling depth records during the next two years.

Coring Still Vital

Advancements in coring practices have done much to reduce the time involved in this phase of drilling operations. The necessity for more certain subsurface information has interested geologists, engineers and paleontologists to an increasing extent. Although many short cuts have been devised, examination of the actual core is necessary in many instances. The core barrels and systems of operation have undergone important changes. Both contiuous coring and single core practices will be continued through the year.

In taking a core with one type of core barrel, it is necessary to pull the entire drill string. Another type of single-core work involves pulling only a small barrel that fits into the bit. The continuous core drilling method is effected by the use of core tubes run inside of drill pipe and recovered by wire lines or reverse circulation. The tube, run through the pipe to a seat at the head of the core bit, is kept in place by special fastenings or through pressure. When the core is completed, the tube is fished out or pumped out, and another tube placed in the hole for the next core. With this method it will be possible to obtain a complete core record from surface to bottom.

Core analysis closely follows coring operations, and careful study of core characteristics and orientation often place a new interpretation on formations. The paleontologist has become a necessary scientist whose work has done much to simplify correlations and to establish the identity of questionable formations.

Marine drilling operations probably will result in several important discoveries during the year. In both California and along the Gulf Coast this type of exploration holds possibilities. Improved drilling barges have been developed to eliminate the usual well foundation expense. Barges of this type are floated to the water location and sunk to make a complete location. New type, storm-proof locations also have been developed by operators who wish to develop submerged leases along the open coast line, and increased development of this kind is expected.

Rotating speeds and weight on bit will receive increased attention during the current year. Speed of drill pipe rotation and weight carried on the tools are closely related to drilling footage. The trend will continue toward a more rapid rotating speed and reduced weight on the bit. Recognition of a straight hole as a good investment has forced operators to seek the most effective drilling methods. Where very hard formations predominate, more hole can be made with a bit by use of moderate rotating speeds than by very rapid rotating speeds. Correct use of the mud pump also facilititates drilling progress, and both rotating speeds and weight on bit are affected by the proper flow of mud through the system.

The welding of oil field casing holds promise in several producing districts, but this practice will not sharply affect the running of conventional screw casing during 1938. The principal factors necessary for the successful welding of casing in oil wells are (1) a readily weldable steel, (2) trained personnel, and (3) necessary auxiliary equipment. Full casing strings have been successfully welded in California and Texas fields, and other areas may expect similar activity. The first welded strings involved large surface casing, but smaller and longer casing strings have been welded in several producing fields, including East Texas.

Pressure Drilling

Pressure drilling is gaining favor in several producing districts. This type of drilling operation has several applications, but it is principally used where there is danger of contaminating the producing

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formation, or where it is necessary to control high pressure gas or water flows. In West Texas and New Mexico fields and at Oklahoma City, pressure drilling has done much to prevent contamination of the low-pressure producing zones. Use of oil as a circulating medium has been part of the practice.

In a California field, the reduced formation pressure permitted water to filter out of the drilling mud at a rapid rate, the water thus lost having adversely affected production of wells after completion. Pressure drilling with oil was introduced, and the loading of the producing formation with mud and water was stopped. After nine wells were drilled under pressure, a standard procedure was adopted. Pressure drilling also has been successfully used during the drilling of high pressure water and gas formations, and in drilling heaving formations.

Casing Programs Fluctuate

Casing programs have been changed in several producing districts, the tendency to carry increased open hole having made possible a smaller hole from the surface than was started several years ago. In several producing districts the practice 10 years ago was to start 24- and 26-inch holes. The average diameter of holes at the surface is smaller than the average of 1927, despite the tendency toward deeper drilling. Several oil companies do not hesitate to run smaller surface casing than was used before the carrying of open hole reached such large proportions. There is no way to avoid running casing when high pressure water or gas formations are encountered in several districts, but through the use of very heavy muds, the running of one string of casing has been eliminated in a California field. It was the practice for some time to run a string of casing to shut off formation water.

Casing weights have changed little, but in the smaller sizes a number of operators have been using very light weight grades. In the Amelia, Texas, field and in other fields, 5¾-inch 13-pound casing has been successfully used. It is believed that such light casing should be used only in the very low pressure areas and in fields producing from shallow depths. In deep wells, such as those at Ketteman Hills or along the Louisiana Gulf Coast, only very heavy Grade D casing is used.

Several casing strings have been successfully cemented below 10,000 feet, and future cementing operations will call for even deeper efforts. The heavy Grade D casing now available is strong enough for use at depths of 11,000 and 12,000 feet.

New Cementing Technique

The cementing technique has been improved in several ways, manufacturers of cementing equipment having played an important part in improvements and changes in practices. Conventional cementing methods still are adequate under ordinary conditions, but special methods and equipment have been developed to meet the more difficult conditions. Cementing ideas have changed and operators do not hesitate to run casing to a point below the top of the producing formation.

"Squeeze" cementing, which is the squeezing of cement through perforations to shut off water or gas, has reached a high stage of development, and this method will be more extensively used in 1938 than ever before. The original squeeze cementing was done to shut off water, but more recently cement has been successfully squeezed through perforations to reduce the gas/oil ratio of troublesome producers. This type of cementing is done in both completion and repair work.

The handling of high formation pressures during completion of wells has led to the development of several important practices. The control of such wells is largely achieved through effective mud practices. By holding the mud to a safe weight, degassing the mud, and circulating it under full volume, wells have been completed in such high pressure fields as Old Ocean, Texas, with mud that ordinarily failed to keep wells under control. The mud was circulated rapidly enough to hold an adequate pressure against the producing formation during final drilling operations.

Directional Drilling

Directional drilling, by no means a new practice, will be extensively used during 1938 in several producing areas. It is possible to drill three and four wells from a single location, and in very rough submerged or inaccessible areas, directional drilling from a single location may be used to advantage. This type of operation has been used several times in drilling relief wells toward burning producers or wells out of control. Directional drilling also is useful in drifting a hole to a desired position on structure, where the operator is able to keep the course of the drill on his own holdings.

The attack on heaving and caving formations has given an improved drilling method, but it can not be said that heaving shale may be consistently drilled to any desired depth. Through a combined mechanical method and chemical attack, considerable progress has been made, and it is possible that important oil discoveries will be made below heaving shale strata that until now have defied all efforts at penetration. Brine mud, chemically treated mud, and dozens of helpful mechanical developments have accounted for recent advancements. Efforts to drill this troublesome formation will continue.

Production Practices Advance

Progress in production practices has favorably affected field operations in all districts. Advancements have been extended to both flowing and non-flowing fields, and higher oil recoveries should follow these constructive efforts. The handling of flowing wells to prolong their natural production period has held the attention of all operators in flush fields.

The correct use of chokes or flow beans on flowing oil and gas wells is recognized as an important aid in the control of factors that give the most efficient operating results. Incorrect use of chokes on large flowing wells in new high-pressure fields may seem to give satisfactory results, but future trouble should be expected where large chokes permit too rapid withdrawals. Conservative utilization of formation energy involves the use of proper chokes—usually small ones. Every well has its critical or most efficient producing rate, and at any time during the flowing life of a well the most effective back pressure can be found by trial and error.

The smallest choke that gives the well allowable in 24 hours is not necessarily the correct size. In

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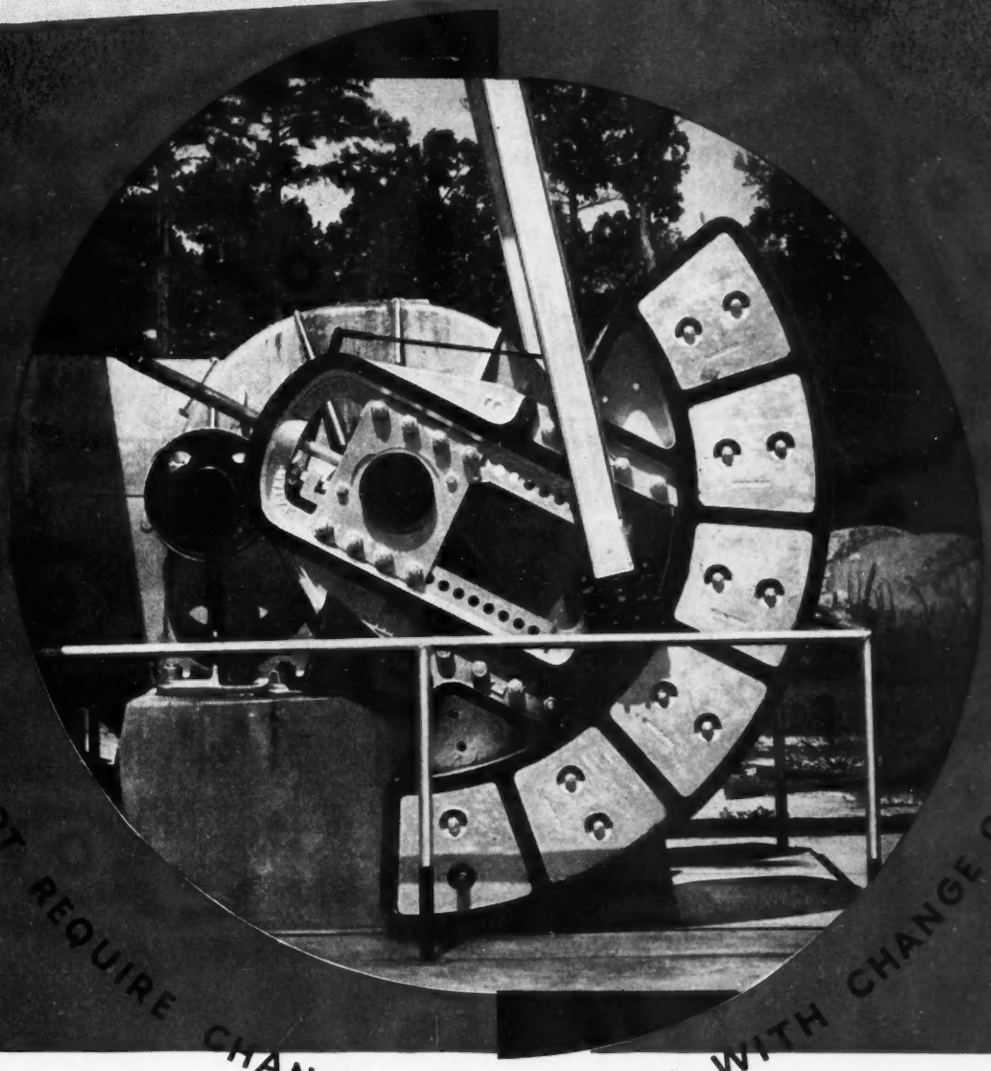

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a number of settled fields, the practice of flowing wells for 12 hours or less through an intermediate size choke is a better practice than using a smaller choke for 24 hours. Conditions vary through the life of a flowing well, and the most efficient back pressure can be found only by experimenting.

Stage choking has prevented freezing in flow lines on high pressure wells that show a high gas/oil ratio. In Old Ocean, Texas, field, the flowing pressure has been reduced by stages with a double choke arrangement.

Bottom-hole chokes are being extensively used in gas wells and in high gas/oil ratio oil wells. By reducing the flow pressure at a point near the well bottom, freezing is eliminated. In a few fields the gas/oil ratios have been favorably affected by the use of bottom hole chokes, but this is not their chief function.

Gas/Oil Ratio Important

Gas/oil ratio control in flowing wells is being attempted by operators in every flush producing district. Gas conservation in relation to efficient production of oil is steadily receiving wider practical attention, the gas/oil ratio control being essentially a problem of coping with free gas in the reservoir while continuing to extract satisfactory quantities of oil. This requires control of the differential pressures responsible for delivery of oil and gas by the producing formation to the well proper.

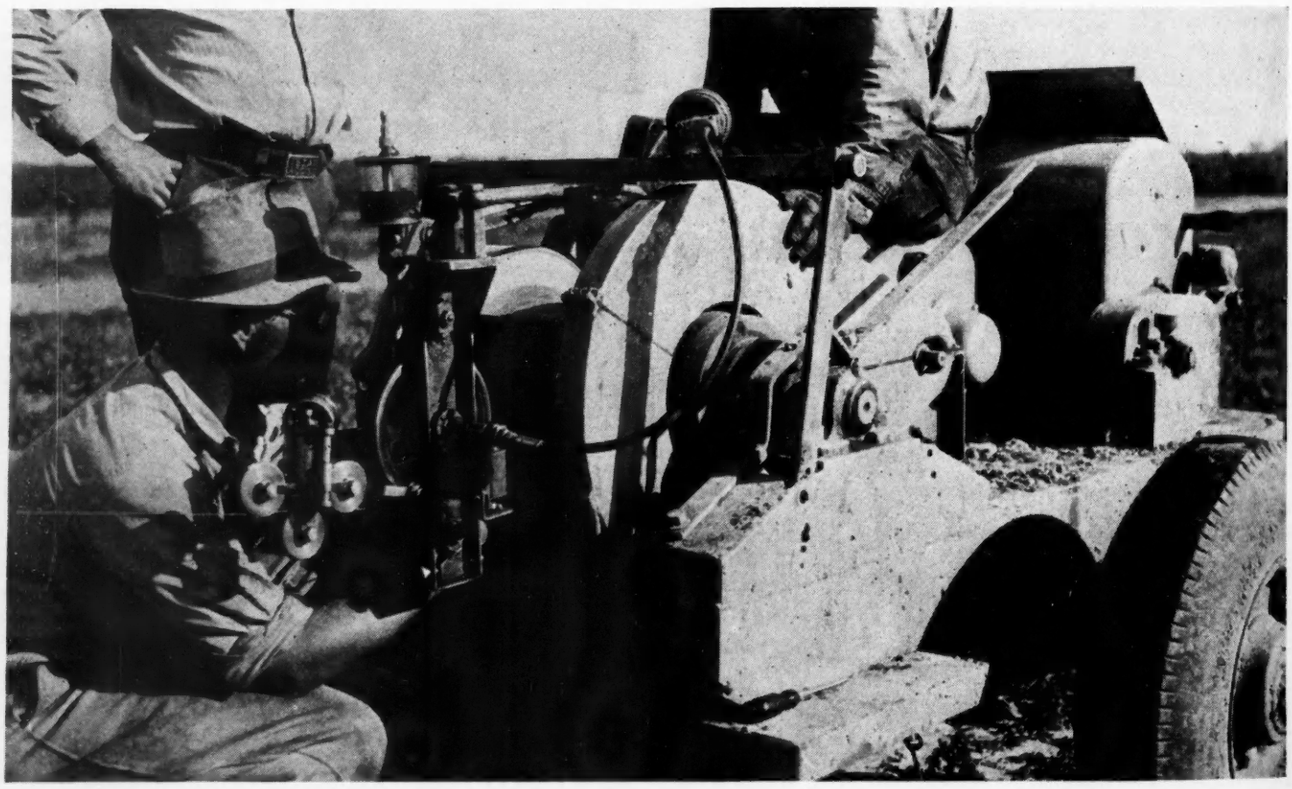
The control of gas/oil ratios can not be accomplished by simple mechanics after serious completion mistakes have been made, as proved by developments of the past year. Repair work or shut-off procedure has done much to control the flow of gas in wells that originally showed high gas/oil ratios.

The reduction of gas/oil ratios by cementing through perforations in casing and liners has proved effective in several fields that ordinarily produce too much gas. This phase of repair work is commonly called a "squeeze" cementing job. The adaptation of this practice to gas strata has restored to production many wells that formerly could not meet gas/oil requirements. Several oil companies, cementing companies and cementing equipment manufacturers have established to their own satisfaction that cement will not set in live oil sand, and most of the larger oil companies do not hesitate to apply cement against gas or water formations, knowing that the cement will contact at least part of the producing formation. Squeeze cementing will be extensively used during 1938 to reduce gas/oil ratios.

Operators are giving increased attention to bottom-hole flowing pressures, as well as to shut-in bottom-hole pressures. One group of petroleum engineers believes that a careful study and analysis of bottom-hole pressures will, at the end of two years, give the operator a complete future picture for any field. Interpretation of the data has been a matter of controversy in several major fields, however, and bottom-hole pressure work has not ended all ills by any means. A closer study of bottom-hole pressures will eventually solve many recovery problems.

Flow Valves Aid Weak Well

Flow valves or kick-off valves have been used to advantage to prolong the flowing life of weak wells in several fields. Where compressor plants or gas under high pressure are available, these valves of various types may be used successfully. They are also useful in restoring weak wells to a flowing status, and in gas lift operations. With these valves the oil is lifted in stages by the combination energy furnished by the formation energy and gas under pressure at



Study of bottom-hole pressures continues to grow in importance. This scene shows the running of a measuring line while taking bottom-hole pressure of a producing well.

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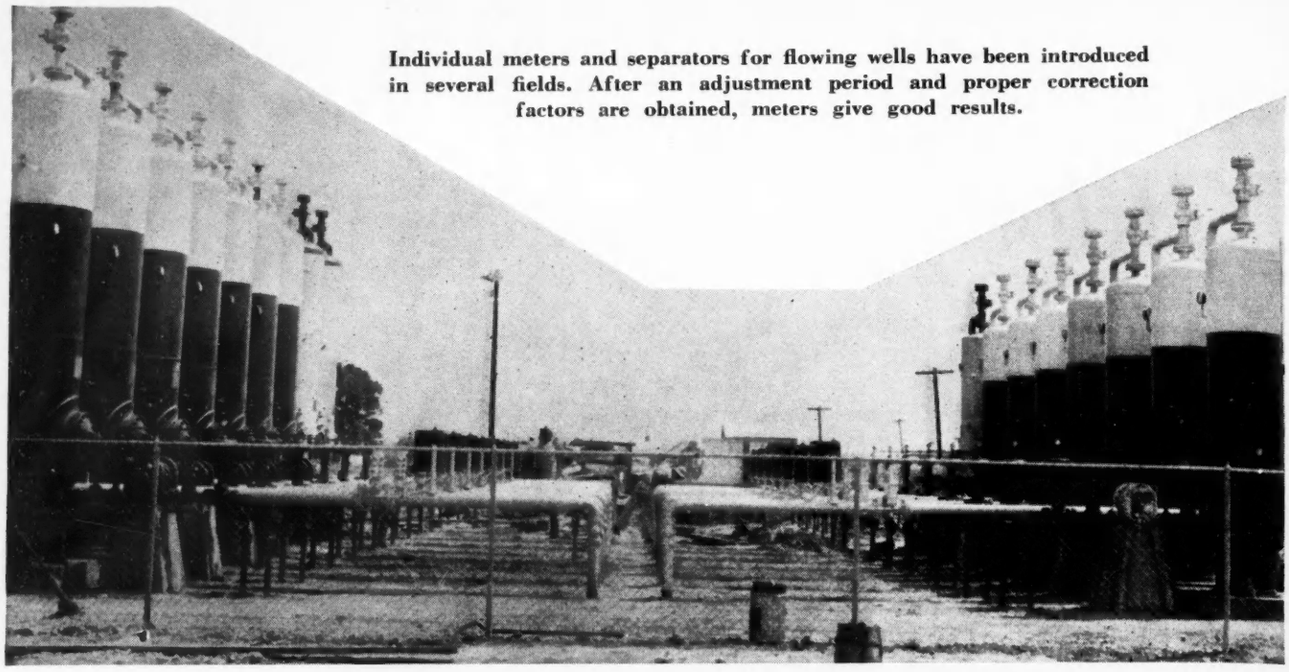

Individual meters and separators for flowing wells have been introduced in several fields. After an adjustment period and proper correction factors are obtained, meters give good results.

the surface. From three to 10 valves are placed in the tubing.

Gas-Lifts Successfully Used

Various adaptations of gas-lift principles were tried during 1937, and increased operations of this type should be expected in such fields as Oklahoma City, East Texas, Rodessa and Kettleman Hills. Gas- and air-lift methods are gaining favor in the semi-flush fields that show a large number of weak flowing wells. The cost or availability of gas often determines the course of gas-lift operations. Many wells need only a little aid, and will flow when helped with gas lift. Advancements in gas-lift operations have been made along different lines, experience having shown the advantage of proper sizes of casing and tubing, the need for improved equipment, and necessity for co-ordination of equipment to the lifting operation.

A light and inexpensive gas-lift system was placed on the market during 1937, and within certain limitations the installation probably will prove popular. With this system only enough pressure is used to raise the heads to the surface. The entire surface assembly may be transported on a small truck, and the operating pressure usually is less than 350 pounds. Complete control is at the surface.

Another new development is a type of gas-lift pump that fits inside the oil string and functions with the aid of a macaroni string. The gas passes down between the tubing and casing and is stopped by a packer near bottom. The bottom valve remains open to permit the well to partially fill the tubing with oil from the formation. When no more oil can be lifted by the formation, the gas from above closes the valve, shuts off the flow of oil from the formation, and forces the slug of oil to the surface. This type of lift has handled large quantities of fluid.

In the Oklahoma City field, a combination gas lift and pumping arrangement has been used to advantage where a larger production of fluid was required for a short period. The practice also holds possibilities for increasing production on a sustained basis. The combination pumping and gas-lift arrangement consisted of using large capacity bottom-hole, electrically-driven pumps equipped with low-energy motors for lifting oil to a height of about 1000 feet from bottom. The gas-lift phase then was used for carrying fluid the remaining 5000 feet to the surface. Wells that ordinarily would not produce more than 500 barrels daily on the pump showed potentials above 5000 barrels daily, and the lifting cost was lower.

Paraffin gives trouble in both flowing and pumping fields, and its control in every district is being sought. The method and rate of production affects the rate of accumulation of paraffin, and most of the mechanical aids consider the importance of keeping the oil in motion and in fully utilizing the formation heat. The rapid flow of oil at intervals has helped to reduce paraffin accumulation in prorated fields. When tubing is kept full of oil, the accumulation of paraffin is reduced to a minimum in pumping wells, continuous operation of pumping wells giving more satisfactory results than spasmodic operation.

Paraffin solvents and mechanical devices have been used with about equal results in several major producing districts. The accumulation of paraffin is largely confined to the top of the hole. Small cable tools and cutters are run in the tubing in both flowing and pumping wells. Solvents with acid and distillate bases are effective in the average producing area. High-test, natural gasoline and strong acid-base solvents are used alternately in several fields.

Controlled back pressure has been effective in retarding the accumulation of paraffin in the Texas Panhandle. Pressure manifolds are used at each well, and the simple arrangement has all but stopped the accumulation of paraffin in wells that formerly were cleaned out every 60 days. In several instances the installation merely checked the formation of paraffin.

Oil From Well Metered

The metering of oil under direct pressure has become an established practice in California, Texas and

The New Industrial Dictionary

(Third Revised Edition)

Old words have new meanings these days. It will pay every manufacturer to learn the new definitions

com'pe-ti'tion—The low-cost plant (there's one in every industry) which can undersell you.

field—en'gi-neer'—Warner & Swasey representative who can help you find ways to cut costs on your turning work.

fu'ture—Time when plants who modernize now will be in position to reap greatest rewards.

in-vest'ment—Money spent which returns a profit. Investors in new Warner & Swaseys report average of 20% net profit per year.

mod'ern-ize—Act of putting yourself in position to compete with low-cost competitor.

op'er-a'tor—Individual you would like to cooperate with. Method: give him equipment that is less tiring, lets him show his skill, lets you both earn a profit on whatever production you have.

prof'it—What is left after costs are paid. Obsolete word in out-of-date plants; used daily in modern plants.

re-ces'sion—Period in which business goes to plants where modern machinery makes possible low cost and precision workmanship.

stock'hold'er—Worried, drooping individual. To revive: increase profit by cutting costs.

tax—(generally pronounced *!-!-?-!-*-!!) Weakness which can prove fatal. Cure: strengthen profit margin by reducing costs, best done by replacing wasteful equipment.

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Louisiana. Displacement type meters are mostly used. Oil produced in the Tepetate, Louisiana, field is metered under high well pressure, the central metering station having eliminated the necessity for individual well storage. The metering of flowing wells is a common practice in California, and at Kettleman Hills the principal operators depend chiefly upon individual well meters for oil measurement. Correction factors have been developed for use in each field, and an error of less than one percent usually is recorded.

Repressuring and pressure maintenance are not being attempted on a large scale, except in a few fields that produce large quantities of surplus gas, or in fields that largely fall under one ownership. When there is a large surplus of gas that represents no extra production cost, it often is practical to return the gas to the formation. The purchase of gas for repressuring is seldom a profitable venture, since the cost of returning it to the formation probably exceeds the good it will do at a later date. Repressuring is a highly controversial subject, but all operators agree that it is best to conserve the original formation energy by producing the gas by a method and at a rate that will give the greatest oil recovery. The production of 50,000 cubic feet of gas with the production of each barrel of oil obviously would require the injection of excessive quantities of gas to maintain the reservoir pressure. Limited repressuring work is under way in Oklahoma, Texas and California.

Acid Treating Shows Gain

The acid treatment of producing formations to increase oil production continues to gain favor in every district that produces oil from limestone. The ultimate recovery of a large number of fields will be much greater than it would be without the use of acid to dissolve the limestone and attract the oil to the well. Recently, new uses were developed for acid in the limestone belts. The acid treatment technique has been applied with good results to gas wells in the Texas Panhandle, the productivity having been sharply increased by the action of the acid on the lime formation. The use of acid has become an indispensable part of operations in several districts.

The use of chemicals to clean out material that obstructs the entrance of production by plugging perforations or the face of the sand is a new practice in California. The substances successfully removed were (1) mud sheaths formed during drilling or redrilling operations, (2) carbonate scale deposited from well water, and (3) waxy-asphaltic residue deposited by crude oil. About 500 wells were treated during the past year, but the practice was not fully successful. The chemicals used are strong inorganic acids, soda ash and caustic, and strong caustic compounds. Mud cake permeated by a solution of soda ash disintegrates rapidly when treated with acid.

Selection of Screen Important

The selection of screen pipe is a very important consideration in every producing district showing troublesome sands. The easy entrance of oil and the exclusion of sand is the primary function of screen pipe. To perform this function properly the screen opening, regardless of type, must bear a definite relation to the grain size of the sand, according to C. J. Coberly. Tests under simple, ideal conditioins, using spherical grains of one diameter, show that a stable bridge is established when the width of a rectangular slot is two times the grain size or when the diameter of a circular opening is three times the grain size. With openings exceeding these values by approximately 25 percent, no bridge will form. Angular grains will form a stable bridge under the same conditions as spherical grains.

The use of gravel in oil wells to check the entry of sand and shale has shown promise in California. Steel balls have been used in several Louisiana wells for the same purpose. About 2000 pounds of one-inch steel balls were dumped into the hole opposite the producing zone, and a recent analysis of results showed that the entry of sand was checked. The steel balls also seemed to break the initial velocity of the gas and fluid flow, and prevented the rush that had attracted the sand. The use of loose foreign objects in oil wells is an adaptation of early water well completion methods, and may prove helpful in low pressure fields.

Pumping Efficiency Gains

Advancement in pumping methods has been largely confined to a higher development of the older practices, but two or three new mechanical devices have appeared. In the intermediate depth fields, individual pumping units, back-side crank units and heavy power installations are being used successfully. The individual units give best results where the load is heavy, or it is necessary to lift a large volume of fluid. The back-side crank units may be used successfully where wells are located close together and a good balance can be attained. The heavy pumping powers will handle from six to 20 wells of medium depth. Marked improvement has been made during the past year in pumping jacks, much of the power loss due to friction having been eliminated. Counterbalancing has sharply reduced power requirements in several major fields.

A hydraulic pressure actuated bottom-hole pumping unit has been introduced in a number of deep fields. The hydraulic pump lift is run into 3-inch tubing to a gas anchor at the bottom of the tubing. Pressure is introduced into the pump through 1¼-inch hydraulic tubing, this smaller tubing being connected to the upper section of the lowered pumping unit. The pump is actuated by oil used as a hydraulic power agent. The surface equipment consists of filters, hydraulic pumps, heaters for the crude oil, and powers. The surface arrangement is very elaborate.

Slow-speed pumping by use of special reducing gears and a long pumping stroke largely originated in California, but the practice was slow to spread to other districts. A few new developments have appeared, very small electric motors and pumping speeds of from one to three strokes per minute having reduced production costs in the shallow producing belts. Slow pumping installations are inexpensive, and their use has reduced rod trouble in a major producing area in California.

Operators everywhere are giving more attention to proper alignment of pumping equipment. Pump jack settings, polish rod travel, belt or gear alignment, pull rod assemblies, and power installations have been important considerations.

Gas-Lock Prevented

The tendency of pumping wells to gas-lock has prompted one oil company to overcome the trouble with a bleed-off arrangement that permits a slow rate of gas release from the casing. By connecting the casing with the flow line by means of a quarter-inch copper tube and adjusting the bleed-off rate with a small pet cock, the release of the gas from the casing is accomplished. Gas-lock is caused by the accumulation of gas in the casing above the fluid level.

Oil treating problems in several fields have been solved or simplified by advancements of both a mechanical and chemical nature. The use of "hay" tanks is gaining

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in favor in several fields, this arrangement consisting chiefly of a gun-barrel tank that is equipped with a series of baffles and filled with excelsior. The oil, after being chemically treated, passes through this tank and leaves most of the water behind. Electrical treating also has made important advances. Stubborn emulsions are being broken down in fields in every producing district. Treating costs have been sharply reduced in California, Texas and Oklahoma. A close study and analysis of petroleum emulsions has enabled operators to treat oil at a fraction of the cost shown during the experimental period. Use of suitable chemical, mechanical and electric devices, and application of heat will give an effective treating combination in any producing district.

Care and maintenance of production equipment were stressed during the past year, and operators in every district showed increased interest in obtaining a longer service life from every type of equipment. A more generous maintenance program will be followed by all major operators during 1938.

The selection of equipment best suited to field and well requirements has favorably affected production costs in every major producing district. The use of ill-fitted and left-over equipment costs less in the beginning, but over a long period production costs have been highest under such operating conditions. The lost time and down time with makeshift equipment have been serious handicaps.

Pipe Line Practices Improved

Progress in pipe line construction and maintenance practices has lowered construction costs, reduced construction time, and increased the service life of pipe and auxiliary equipment. The construction of a large pipe line now requires little more than half the time needed for similar construction of 10 years ago. Advancements in welding, stringing, bending, ditching and refilling have simplified pipe line construction and encouraged the laying of lines that probably would not be built under old methods.

Particular progress in welding joints has been made. The pipe ends are beveled to about 30 degrees, and sections from 200 to 300 feet in length lined up on skids and dollies for the firing line welding, with one construction method. One crew lines up the pipe, another crew tack welds it, and a third crew finishes the welding. When all joints comprising a section are welded, the entire section is tied into the line by "bellhole" welding, in which the pipe is welded with the pipe in a stationary position.

The "stove pipe" method of welding continues as popular as ever. This type of construction calls for the welding of one joint after another into the main line, the joint being welded to completion as soon as it is lined up. After welding a short section of the line, it is tested for leaks, wrapped or painted, and buried. In rough country this type of construction often holds advantages.

Improvement Brings Speed

Improvement in both the electric and arc welding methods has been a factor in pipe line construction progress. Welders now are able to deposit metal almost twice as fast as the average for 1927. Electrodes have been greatly improved, and the tensile strength of welds is much higher than formerly was expected. A tensile strength of 75,000 pounds per square inch is not unusual with the newest electrodes.

The old type, 90-degree bend has been eliminated where volume and pressure maintenance are considerations, and even lesser angles are achieved with gentle bends that barely affect the fluid flow.

Coupled joints are still used, and recent improvement in coupling design has widened the usefulness of this type of construction. The so-called "quick" couplings formerly were extensively used in short lines and low pressure lines, but the new type couplings permit their use in lines of any type. The strength and simplicity of couplings are attractive considerations in many pipe line projects.

Although coating of pipe lines involves a number of controversial points, the practice is followed in many districts by operators who rely on this method of protection against corrosion. The treating and coating process has been speeded and simplified by the use of special machinery. The base coating usually is done in the shop before the pipe is delivered to the job. Wrapping machines closely follow the welders. The finished wrapping job usually is tested with an electrical instrument to eliminate exposed spots on the pipe.

As a compromise between claims of the wrapping enthusiasts and those of the non-wrapping advocates, major pipe line operators are treating and wrapping pipe in the known corrosive soils, and are simply painting the pipe in the definite sweet soils. The service life of pipe in the favorable soils is very high.

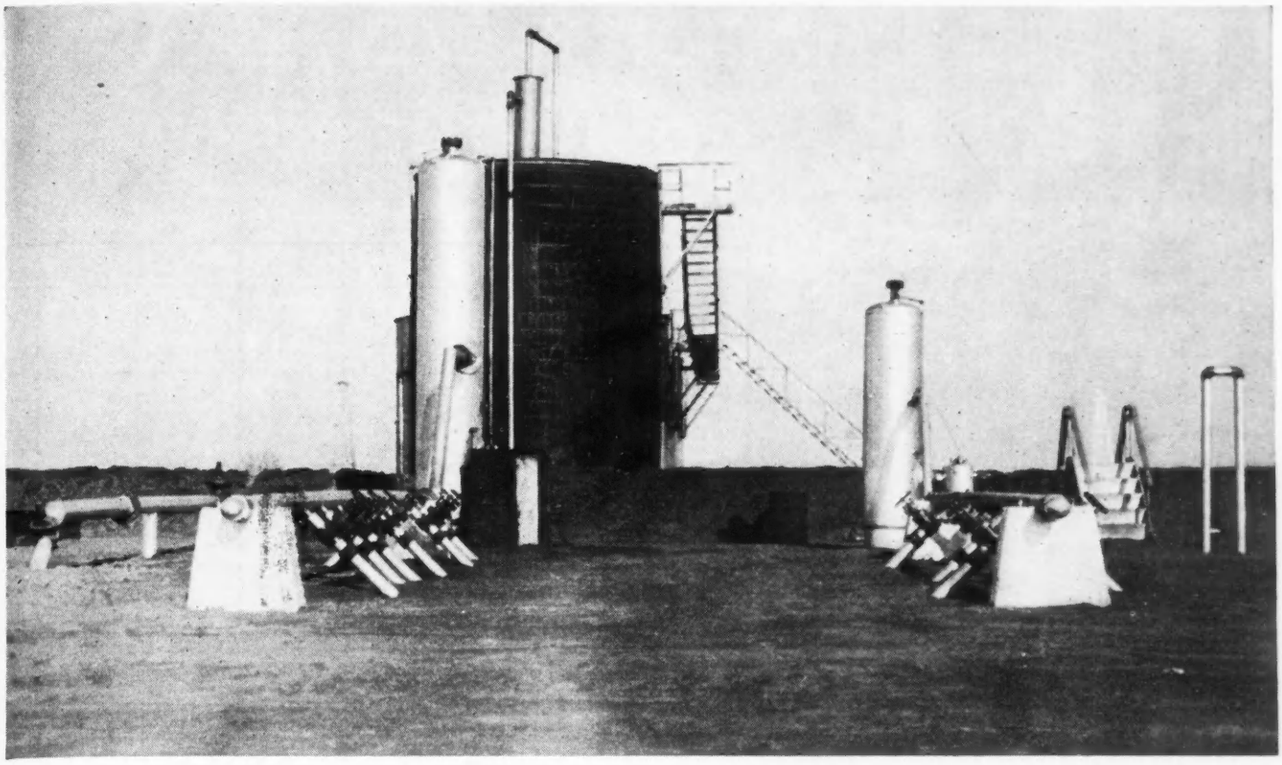
Corrosion Studies Continue

Corrosion annually takes a heavy toll from pipe line companies. Corrosion in its literal sense is the disintegration, wasting away, or tendency of metal to return to its original state. Pipe line operators everywhere are attempting to check this tendency by any practice of method that gives results. Corrosion is an electro-chemical action, and it may be caused by soil acids or stray electrical currents. The destruction of the pipe follows an attack of either type.

Development of a wind-driven, direct-current, cathodic protection unit to check pipe line corrosion has done much to offset the discharge of electrical energy from the pipe. The unit is placed directly over the pipe line and the negative pole of the generator bonded to the pipe. The positive current from the generator is carried to a point of distribution in the ground by a suitable copper wire. This copper lead line runs perpendicular to the pipe line and connects to a heavy ground about 1000 feet from the generator. Power is derived from the wind, and the discharge of current into the ground offsets that which normally would be discharged by the pipe. The objective is to generate and deliver a positive current to the soil near the line, pass that current through the soil to the line and back to the generator, and thus control the potential relation of the pipe and surrounding soil. The wind-driven units are placed in corrosive areas, and one unit can protect several miles of pipe line.

Engine-driven units using natural gas, gasoline or kerosene have appeared, and where prevailing winds are weak the more positive power is effective. Very small engines were used at first, but more substantial models are planned for the future. The cathodic protection principle has been recognized by all pipe line companies.

Pipe line companies are giving increasing attention to operating capacities. The movement of oil and gas has been increased by the maintenance of higher operating pressure, improved winter practices, and more efficient pumping equipment.



Two separators handle production for the entire lease. At the base of the separator to the left of the picture is an enclosed chemical treater.

Dual Manifold

MORE FLEXIBLE CONTROL

By FRANK B. TAYLOR
Staff Writer

AN UNUSUAL production manifold arrangement that allows all-purpose operation is a lease construction on the I. Nadel oil properties in the southwest development of Burrton field, Reno County, Kansas. In general manner of connection, the lead-line manifolds are quite similar to other installations. However, instead of carrying crude from individual separators at each well, the Nadel arrangement handles raw crude from the entire lease. Other departures from customary hookups allow more flexible control.

Nine wells produce into the manifolds. All production is from chat above the Mississippi line, at depths varying slightly from 3,380 feet. The total lease allowable is approximately 20,000 barrels per month.

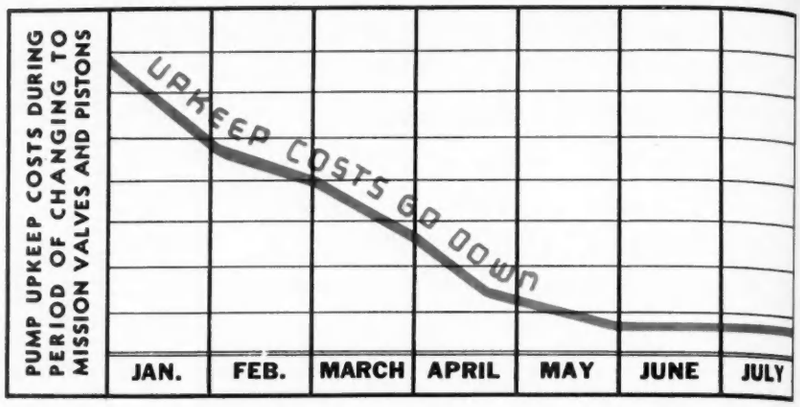
Getting away from the 90-degree angles, the design of the parallel headers incorporates 45-degree connections. This allows a very sightly job, with accessibility to valves assured. Midway between the two sides of the manifold, buried beneath the surface, is a 'Y' connection joining the two headers. This buried connection is controlled by a surface valve.

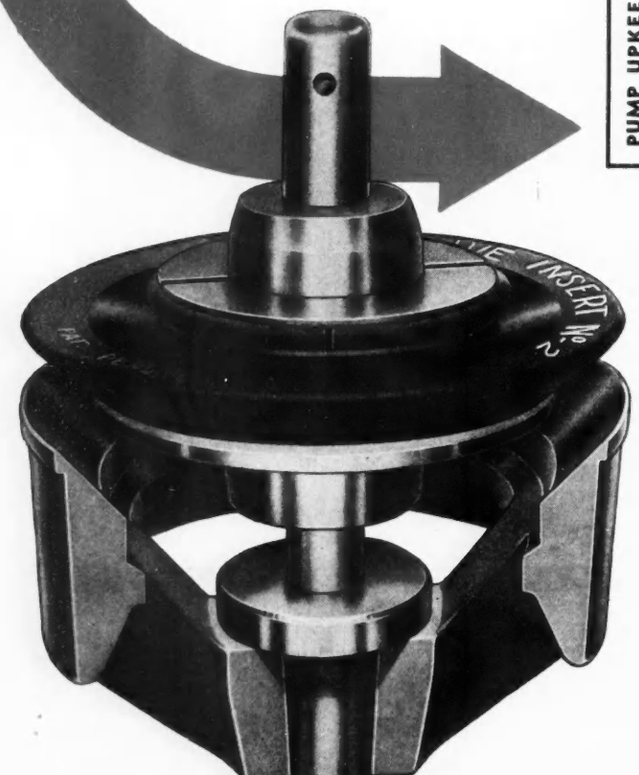
Each header is about 30 feet in overall length, and is of 6-inch pipe. Concrete forms support the units about 3 feet above ground. Lead lines are of 4-inch pipe, there being one for each well on the property. Although there are at present only 9 wells feeding into the lease storage, construction allowed for a total of 18 connections, the maximum number that can be drilled on the acreage.

Two separators are directly connected to the headers, one on each side of the manifold. All production passes through the separators, in whatever proportion desired by the operator. This control is by means of the by-pass connecting the two sides of the manifold. In addition to this manner of control, the arrangement allows the testing of any individual well without the necessity of shutting in any other producing wells. Any or all wells may be produced through either or both separators.

From the separators the crude passes into a 750-barrel wash tank and into a battery of three 1,000-barrel steel stock tanks. A by-pass makes it possible to run the production directly into storage from the separators when gauging a particular well while other production is entering another storage tank through the wash tank.

WHEN MISSION VALVES *and* PISTONS GO IN THE PUMPS . . . .





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WEAR-TAKING, REMOVABLE BUSHINGS TAKE THE BLOWS INSTEAD OF THE SEAT.

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- • • **Saves labor** of changing seats often.

IMPROVED MISSION PISTONS

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MEN IN THE INDUSTRY'S NEWS

E. L. SHEA, executive vice president of Tide Water Associated Oil Company, with a group of company officials recently made an inspection trip of company producing properties in Coastal Louisiana. Included in the party were: E. H. Salrin, vice president, of Houston, Texas; R. B. Pringle, vice president, of Tulsa, Oklahoma; R. T. Lyons, assistant vice president in charge land and geological departments; D. E. Legan, production superintendent; T. A. Hall and George L. Nye, engineers, and T. G. Kelliher, landman. Tide Water Associated Oil Company recently opened a land office at 616 American Bank Building, New Orleans, with Kelliher in charge.

JOHN LOVEJOY, president of Seaboard Oil Company, New York, was expected to return to headquarters February 5 after a trip to the Pacific Coast.

NELSON DICKERMAN, vice president, Amiranian Oil Company, New York, advised recently the first shipment of material destined for a drilling site on the company's concession in Iran would leave New York early in February.

R. C. HART, former vice president of Clyde-Texan Oilfields Company, has been elected president of the company, succeeding A. H. Woodfin of Fort Worth. Headquarters of the company have been moved from Fort Worth to Dallas, and C. C. Hansen, vice president and treasurer, is in charge of the office, located on the fourth floor of the Continental building. Hart maintains a part-time residence in London, England.

GEO. B. McCAMEY, president of Cordova Union Oil Corporation, Fort Worth, accompanied the body of his mother, Mrs. Fannie B. McCamey, who died in a Fort Worth hospital January 31, to Belington, West Virginia, for burial. The McCamey family resided at Belington for a long period.

ROBERT W. McILVAIN, JR., Illinois production superintendent for The Pure Oil Company, discussed drilling methods and problems in the coal basin area before members of the Olney Chamber of Commerce holding their annual meeting last week.

LEWELL ADAIR, Atlantic Refining Company engineer formerly located at Great Bend, Kansas, has been transferred to Scott City, in the western part of that state.

HENRY C. REA, geologist for Inland Exploration Company, has been in Peshawar, India, and is returning to Afghanistan to continue his explorations in the South.

ALBERT E. WATTS, chairman of the board of Sinclair Consolidated Oil Corporation in New York, is in Mexico City.

STRAUDER G. NELSON, independent operator of San Antonio, Texas, with extensive interests in the light oil district of Mexico, is in Mexico City. He is accompanied by Mrs. Nelson.

AXELL J. BYLES, president of the American Petroleum Institute, New York City, will be the principal speaker at the annual banquet of the North Texas Oil and Gas Association, February 26, at Wichita Falls, Texas.

JAMES B. SULLIVAN, with Carter Oil Company, Tulsa, has recently been transferred from the Seminole area to Oklahoma City.

W. R. FINNEY, president of Oklahoma Pipe Line Company, Oklahoma City, has been appointed chairman of the pipe line committee for the tenth international Petroleum Exposition to be held at Tulsa next May.

ROY T. HAZZARD, and B. W. BLANPIED, with Gulf Refining Company, Shreveport, Louisiana, were the principal speakers at the Houston Geological Society's night meeting at the auditorium of the Houston public library, February 3. Their subject was "The Chickasawhay Problem in Southeast Mississippi and Its Sub-Surface Stratigraphic Importance in Southern Louisiana."

HENRY ENGLAND, with Sun Oil Company, Brenham, Texas, was recently visiting in Houston.

Gillette Hill, president of Aetna Oil Company and prominent lease broker of Houston, is shown on a recent fishing trip in Gulf of Mexico. He is shown exhibiting the days catch, two small red snappers.

J. EARLE BROWN, vice president and chief geologist of the Amtex Petroleum Corporation, Fort Worth, has resigned to engage in consulting work, property inventories and appraisals. Office has been established on the 8th floor, Trinity Life building, Fort Worth.

JOHN BAIRD, New York, export representative for a number of American manufacturers of drilling and production equipment, will leave New York early in February for a trip to the Pacific Coast.

W. M. SMALL, who has served Standard Oil Company of New Jersey's subsidiaries in Mexico, Argentina, and various European countries, has been made general manager in Western Egypt for Standard Oil Company of Egypt.

H. DABELL, formerly with Romana Americana in Roumania, now holds the position of chief inspector of oil fields for the Egyptian government.

DR. FREDERICK G. CLAPP, New York, Near East representative of Inland Exploration Company, active in reconnaissance work in Afghanistan, is expected in Kabul early in February.

ALFRED WRIGHT, for several years located in Venezuela with Mene Grande Oil Company, subsidiary of Gulf Oil Corporation, soon will sail from New York for Iran in his new connection with Amiranian Oil Company, an American organization which has a large concession in the eastern sector of that country. Wright will act as general superintendent for the new organization.

MAJOR FRANK HOLMES of London, one time holder of a concession on Bahrein Island, now controlled jointly by Standard Oil Company of California and The Texas Company, and negotiator of the Kuwait concession, also in Arabia, now controlled by Gulf Oil Corporation and Anglo-Iranian Oil Company, was a recent visitor in New York.

FRANCISCO RAPPALLINI, general manager for Yacimientos Petroliferos Fiscales, Plaza Hunicul, Argentina, is in Los Angeles on business for his company.

C. S. ATWELL, New York, vice president, South American Gulf Oil Company, is in Colombia, South America, in connection with development work in the Barco Concession.

HARRY W. McCOBB, assistant general superintendent of Nederlandsche Koloniale Petroleum Maatschappij, will sail from New York early in February to resume activities in Sumatra.

L. W. ELLIOTT, general manager of Nederlandsche Koloniale Petroleum Maatschappij at Soengei, near Palembang, Sumatra, is expected to return there in May after having spent some time in the United States. J. G. Stout is acting general manager during Elliott's absence.

D. E. PARK, general manager of Colombian Petroleum Company, Colombia, recently visited New York.

H. M. LYTELL, formerly with General Petroleum Corporation in California, has been placed in charge of field operations for Socony Vacuum Oil Company in Egypt.

LAWRENCE E. FERGUSON, manager of tubular goods division for Lucey Products Corporation of Tulsa, resigned as of February 1 to take charge of surplus materials and their disposition for Indian Territory Illuminating Oil Company at Bartlesville.

V. E. LANG, acid treater for Dowell, Incorporated, formerly stationed at Great Bend, Kansas, has been transferred to the Flora, Illinois, station of the company.

JOHN DONALDSON has been named president of the White Eagle Oil Company Credit Union, organized at Casper, Wyoming. Other officers are H. J. Holcomb, vice president; K. W. Gass, treasurer; Gracia Gorbutt, clerk, and John Fisher, director.

JOHN PUGH, Pugh Drilling Company, active in the Illinois coal basin area, is recovering from an attack of the flu.

F. G. STODDER, Wichita operator, has been named chairman of the membership campaign committee of the Kansas Independent Oil & Gas Association, announced E. B. Shawver, association president.

JOHN RUSSELL, head of The Texas Company's Illinois headquarters office at Mattoon, addressed the Kiwanis Club meeting in that city last week.

ELI T. "MIKE" MONSOUR, palentologist with Huasteca Petroleum Company has returned to his headquarters at Tampico, Mexico, after an absence of three months in the United States, due to breaking his right leg at Monterrey, Mexico, last November.

T. E. WOODS, drilling superintendent with Nederlandsche Koloniale Petroleum Maatschappij, Soengei Gerong, is due back in headquarters soon after a furlough spent largely in San Jose, California.

SOCRATES BROULLON, production superintendent with Yacimientos Petroliferos Fiscales, Comodoro Rivadavia, Chubut, Argentina, is in the United States to make a study of field methods and equipment. Temporarily he is touring the California fields.

CLARENCE TIFFT, purchasing agent for N.K.P.M., Palembang, Sumatra, accompanied by Mrs. Tifft, is visiting in the United States.

H. PAUL GRIMM, formerly president of Pacific Western Oil Corporation, resigned some time ago and has formed Madison Oil Corporation to acquire leases in the Wilmington area.

C. B. WILLIAMS, assistant manager of the West Texas-Mexico division of The Texas Company with headquarters at Fort Worth, has been named production manager for the Colombian Petroleum Company, a subsidiary. He will make his headquarters in Cucuta, Colombia, South America.

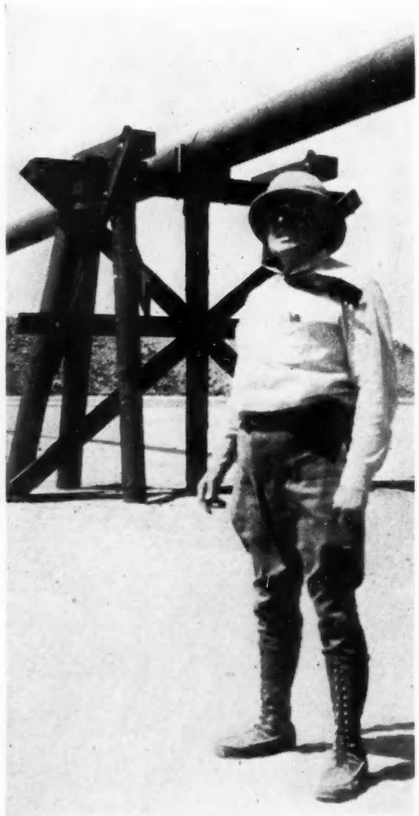
MAURICE KATZ, treasurer of Compania Explotadora de Petroleo "La Imperial" S. A. at Tampico, Mexico, is in the United States on a combined business and pleasure trip.

BERTRAND H. SNELL, president of York State Oil Company and republican leader in the House of Representatives, was in Wichita, Kansas, last week in connection with business of the company.

GLENN E. NIELSON, formerly of Cut Bank, Montana; W. W. Lindsey, Billings, Montana, and Meyer Rankin, Cody, Wyoming, are members of Hsuky Refining Company which last week purchased Cody Petroleum Company and the Park Refinery for a consideration reported to be in excess of $500,000. The Cody Company was organized as a producing company holding leases in the Oregon Basin several years ago. The refinery was built in 1935 by Valentine Kirk, who is retiring as manager of the two companies, and C. W. Hart, Missoula, Montana.

MAJOR T. R. ARMSTRONG, executive department of Standard Oil Company of New Jersey in New York, is in Mexico City.

JAMES M. GARRETT, station engineer at Prieto Terminal of Mexican Gulf Oil Company, near Tampico, Mexico, has returned to his duties after a vacation in Texas.



L. W. Clark, gas engineer with Canadian River Gas Company, Amarillo, Texas. Clark, standing on the sands of the Canadian River, that become "quicky" with water, is framed by a background of major river crossing.

WALTER G. BLACK was made manager of the Production Department at a recent meeting of the board of directors of Standard Oil Company of California. Floyd S. Bryant, who was at one time in charge of the land department in the Los Angeles office, was made assistant to Black.

JOHN MAHONEY, Union Sulphur Company, has been elected president of the South Louisiana Geological Society. The election took place at Lake Charles on January 24. Other officers elected to serve for 1938 were: Dean Metts, Humble Oil & Refining Company, vice president; W. R. Canada, Stanolind Oil & Gas Company, secretary; and Baker Hoskins, Shell Petroleum Corporation, treasurer. Following the business meeting, John Ivey, Union Producing Company, gave an interesting discussion on the Rodessa field.

C. H. WRIGHT, president of Sunray Oil Corporation, last week announced the board of directors had voted a regular quarterly dividend of 68 cents a share on the preferred shares, payable April 1 to stockholders of March 8.

DIED:

GAYLE ALLEN STEELE, president and general manager of Sinclair-Pierce Oil Company, S. A., died in a hospital in Mexico City on January 28, as a result of peritonitis, which developed following an appendix operation on January 24. He was born in Newton, Kansas, in August, 1883, and went to Mexico in 1902 to accept a position with the old Mexican Central Railway. In 1905, Steele started as a clerk with the old Waters-Pierce Oil Company at Tampico, predecessor of the Sinclair-Pierce Company. He gradually worked up to the position of general manager, and in May, 1928, was appointed president and general manager, a post he kept when the Sinclair Company took over control. The body was sent in a special car to San Antonio, Texas, where interment took place on February 1. He is survived by his wife, son and daughter.

HOWARD T. ALEXANDER, age 70, former president of the H. T. Alexander Oil Company, died in the Homeopathic Hospital in East Orange, N. J., on January 29, following a heart attack.

CLYDE O. DEVERSE, 50, district superintendent for Indian Territory Illuminating Oil Company at Oklahoma City, died February 1 as a result of burns suffered in an explosion. DeVerse moved to Oklahoma City in 1928. He was one of the men who assisted in drilling the discovery well of the Oklahoma City field in that year. Funeral services were held at Oklahoma City February 3, with interment at Sapulpa.

CHESTER CONKLIN SHELDEN, SR., 57, president of Diana Oil Company and influential in having the first oil test drilled in the El Dorado field of Butler, Kansas, died January 27 after an illness of over a year.

ASSOCIATION ACTIVITIES

Eastern A.P.I. District meeting dates changed

Pittsburgh.—Dates for the Spring meeting of the Eastern District, American Petroleum Institute, Division of Production, have been changed from April 28 and 29 to April 14 and 15, in the William Penn Hotel, Pittsburgh.

The reason for making this change is due to a conflict in making suitable hotel arrangements.

Mid-Continent A.P.I. program announced

Real problems of the producing end of the oil industry will be under discussion by men deemed to be experts in their various lines in the comprehensive program which has been arranged for the Spring meeting of the production division of the American Petroleum Institute, Mid-Continent Division, which will be held in Amarillo Thursday and Friday, Febrary 16 and 17.

The program committee under the leadership of Charles A. Daniels, Amarillo division production superintendent for the Phillips Petroleum Company, has been exceptionally careful in the selection of subjects to be handled and in the men who are to present them to the membership of the association.

While the primary discussions will pertain to drilling and production practices, other subjects directly related to the conduct of the oil industry will come in for their share of exploitation.

Some of these later subjects are vocational training in the industry, accident prevention, trends of modern equipment, and advantages of unitization of leases.

Each year sees the oil industry building itself into a closer unit by broadening the scope of its various departments with each department seeking closer relationship with other departments to the end that the industry as a whole may progress the more rapidly.

The program to be offered to those in attendance at the Amarillo meeting is as follows:

Thursday Morning Session.

"Vocationl Training in the Oil Industry" by L. K. Covelle, State Supervisor of Industrial Education for Oklahoma, Stillwater.

"Use of Hydraulic Pumps in the Mid-Continent Field" by J. F. Crawford, British American Oil Production Co., Tulsa.

Thursday Afternoon Session:

"Unitization of Leases and Pressure Maintenance," by E. O. Bennett, Continental Oil Company, Ponca City, Oklahoma.

"How and Why of Oil Well Shooting" by Paul F. Lewis, Manager American Glycerine Co., Tulsa.

"Sulphate Resisting Cement for Oil Well Cementing" by Svend Rordam, Director of the Division of Research for the Trinity Portland Cement Co., Dallas.

Friday Morning Session:

"Squeeze Cementing for Controlling Oil/Gas Ratios" by C. P. Parsons, Halliburton Oil Well Cementing Co., Duncan, Okla.

"Application of Electric Logging Methods to West Texas Problems" by W. J. Gillingham and W. B. Stewart, Schlumberger Corp., Midland, Texas.

"Accident Prevention in the Oil Industry" by G. O. Lockwood, Safety Director, Cities Service Oil Co., Bartlesville, Okla.

Friday Afternoon Session:

"Hazardous Use of Old Pressure Vessels in Oil Fields" by G. Raymond, Chief Engineer, Black, Sivalls & Bryson, Okla. City. (This will be illustrated).

"Modern Trends in Rotary Equipment and Drilling" by J. E. Brantley, Pres. Drilling & Exploration Co., Los Angeles, Calif.

"Practical Methods of Determining Productivity in Reserves on Leases by Bottom Hole Pressure and Core Analysis" by W. S. Walls, Phillips Petroleum Company, Bartlesville, Okla.

A.P.I. Southwest District program is arranged

The program committee in charge of the spring meeting of the Southwestern District of the American Petroleum Institute to be held in the Blackstone Hotel, Fort Worth, Texas, on March 24 and 25, 1938, has practically completed its tentative program. Twelve interesting papers dealing with various phases of production engineering, drilling practice, and production practice have been arranged for.

Following is a tentative outline of the papers now under consideration, speakers and other details to be announced later:

Thursday, March 24, 1938

Morning Session. "Production Engineering" (Main Ball Room — Mezzanine Floor). Presiding: W. S. Morris, East Texas Engineering Association. Associate Chairmen: C. E. Reistle, Jr., Humble Oil & Refining Company; H. H. Hardison, Standard Oil Co. of Texas.

1. Address of Welcome.
2. Response by District Chairman.
3. "Developments in Cementing Practice Technique."
4. "Pressure-Production Relationship —East Texas Field."
5. "The Problem of Phase Relationships of High Pressure Condensate in Distillate Wells."

Afternoon Session. "General Session" (Main Ball Room—Mezzanine Floor). Presiding: A. G. Levy, Crown Central Petroleum Corporation.

1. "The Growth and Importance of Natural Gas in the Southwest."
2. "Administration of the Oil Industry in New Mexico."
3. To be announced.

Friday, March 25, 1938

Morning Session. "Production Practice" (Main Ball Room — Mezzanine Floor). Presiding: W. E. Schoeneck, The Ohio Oil Company. Associate Chairmen: L. A. Ogden, The Pure Oil Company; H. M. Staggs, The Atlantic Refining Company.

1. "Pipe for Transportation of Salt Water."
2. "Selection of Casing Seats."
3. "Well Treatment After Perforating."
4. Report of Nominating Committee and Election of Officers.

Afternoon Session. "Drilling Practice" (Main Ball Room — Mezzanine Floor). Presiding: E. A. Wahlstrom, Goldsmith Pool Engineering Commission. Associate Chairmen: C. G. Staley, Lea County Proration Office; W. A. Alexander, Shell Petroleum Corporation.

1. "Drilling and Production Practices in the Permian Basin."
2. "Determination of Porous Zones by Drilling Rates."
3. "Deep Drilling on the Gulf Coast."
4. "Marine Operations on the Gulf Coast."

East Texas oil men plan A.P.I. meeting

Oil men in East Texas are looking forward with much interest to the meeting of the East Texas Chapter of the American Petroleum Institute which will be held in Kilgore, Texas, Tuesday evening, February 15, 1938. The meeting will be in the High School auditorium and open to the general public. There will be no admission charge.

A full program has been planned including a dinner at the Kilgore Hotel at 6:15 P. M. to which all oil men in East Texas are invited. The cost of the dinner is $1.25 per plate. Reservations for which should be made with the Secretary of the Chapter at P. O. Box 56, Kilgore. While the dinner is an entirely separate feature from the meeting at the High School auditorium it has proved to be a very interesting part of the program.

At the meeting in the High School auditorium which will begin at 8:00 P. M., the order of business includes the election of officers for the year 1938. The nominating committee which was appointed at the last meeting will make its report but any one has the privilege of making additional nominations from the floor.

The subject of "Treating Oil In The East Texas Field" will be discussed by B. M. Givens, of the Sun Oil Company from Arp, Texas. F. G. Beckman from Muskogee, Okla., will discuss "The Completion of Wells in the East Texas Field by the Reverse Circulation Method." These two subjects should prove to be of much interest to every operator in the East Texas field.

The crack Safety Team from the Empire Pipe Line Company at Gladewater will demonstrate their skill in First Aid in a short presentation especially arranged for this meeting.

The Magnolia quartet from Kilgore under the direction of Roy Taylor will present a program of entertainment, followed by Frank Carothers, of Norvell-Wilder Supply Company from Houston, who will give a humorous discourse.

McPherson, Kansas.—The McPherson chapter, The American Petroleum Institute, met February 3, heard D. O. Barrett, production engineer for Gulf Oil Corporation, who discussed and demonstrated electrical and mechanical weighing devices.

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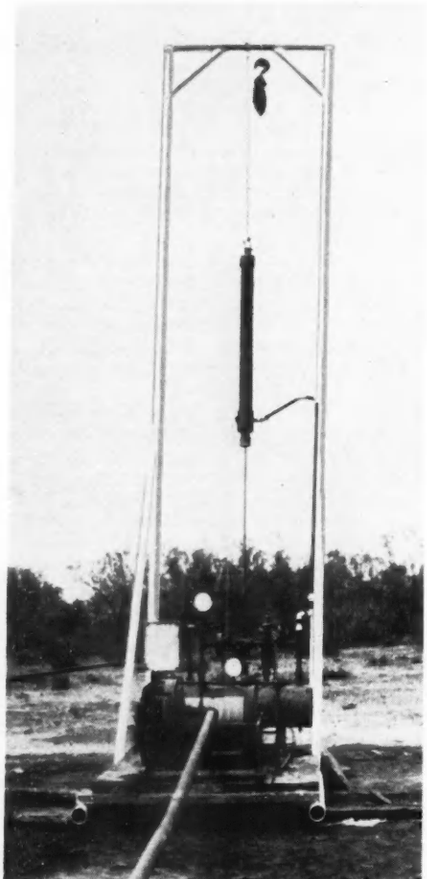
Vol. 1 | Houston, Texas, February 7, 1938 | No. 2

NEW FLUID-RAISING ECONOMY RECORDS ARE BEING MADE



Notice the compactness and simplicity of the System. Notice also the complete absence of all usual costly pumping equipment.

Nixon Surface Control Gas-Lift Provides Many Savings!

Scores of wells are now equipped with the Nixon Surface Control Gas-Lift System. In every case where records are kept, and they are many, this improved fluid raising system is showing amazing economy of operation. The cost of raising fluid by this system is unbelievably low.

The savings are not restricted to the operation, but apply also to the original purchase price which is considerably lower than the Standard Type pumping rig.

Before installing the Nixon Surface Control Gas-Lift System our engineers determine the point from which fluid can be raised to the surface most economically, with the given amount of working pressure. This working pressure is determined by the natural flow pressure—the amount of fluid to be raised—and the origination and availability of auxiliary pressure.

When the most economical operating depth is determined, one of the series of Surface Control Valves is located at that particular point in the tubing string. It is through this valve only that pressure enters the tubing and forces the fluid to the surface.

The oil reaches the surface in a smooth, even flow. It is not blown, and not cut, consequently it does not require treatment to make it suitable for pipe lines.

Investigation Results In Savings

If you are interested in raising more fluid at less cost; if you want to change unprofitable wells into profitable ones—do what so many other companies have done—Investigate the Nixon Surface Control Gas-Lift System. Write or wire the nearest Wilson Supply Company Store or Sales Office (see locations below) and full information will be furnished immediately.

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EXCLUSIVE GULF COAST DISTRIBUTORS FOR: Wilson-Snyder Pumps; American Cable Tru-Lay Pre-formed Wire Rope; Kewanee Boilers; Sievers Reamers; Drift Meter, Jr.; Gray Swivel; Nixon Surface Control Gas Lift System; Nixon True-Taper Slip and Spider; Bowen Pack-Off and Releasing Drill Pipe Overshot; Douglas Weight Indicator.

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SALES OFFICES—Tulsa, Oklahoma; Dallas, Texas; Shreveport, Louisiana.

Slight Improvement

Quotations on gasoline and heavier fuel oils showing tendency to advance although stocks of motor fuel are still way too high

AFTER having held steady for some time, the markets of the oil industry during the past week displayed some signs of improvement.

Gasoline prices in the Chicago market were tending to rise, as quotations were up one-eighth of a cent a gallon in some instances.

Another hopeful sign was some improvement in prices of the heavier fuel oils. This indicated some increase in industrial activity. The No. 6 fuel oil in the Chicago market, for instance, was up 5 cents a barrel to a new range of 55 to 60 cents a barrel.

Crude Control Encouraaging

The market situation undoubtedly has been improved by virtue of the unusually strict control of crude oil production now prevailing.

Furthermore, effective regulation of crude production has been accompanied by a cutting back of refinery activity.

Production Down

In the week ended January 29 the production of crude oil in the United States averaged 3,357,650 barrels daily, having declined substantially, largely because of the Sunday shut-down program in Texas.

At this relatively low level the production in the United States was 5.1 percent larger than in the corresponding week a year ago.

This comparatively small increase in crude production over a year ago is more than justified by the increase that has occurred in the demand for petroleum.

Crude Runs to Stills

Current refinery operations are also well in line with market conditions. In the week ended January 29 runs of crude oil to stills averaged 3,170,000 barrels per day, having been cut back 70,000 barrels a day from the previous week. At the new level the refinery operations were 5.8 percent higher than in the corresponding week of last year. This increase within the year was somewhat smaller than the increase meanwhile in petroleum demand.

Gasoline Stocks Too High

The gasoline market continues to be adversely affected by the unusually large inventories.

In the week ended January 29, the gasoline stocks in the United States rose beyond any point ever reached before. The stocks at the end of the week totaled 84,844,000 barrels, having shown a further rise of about 2,000,000 barrels within the period.

This new level of gasoline stocks was slightly higher than the previous all-time peak that was reached at the end of March last year. The current inventories are 22 percent larger than the total on hand one year ago.

In contrast with this large inventory of gasoline, the demand for gasoline has been running in recent months only about 10 percent greater than in the corresponding months a year ago.

Fuel Oil Stocks

The stocks of fuel oil finally have been brought up to levels as high as the markets justify. In the week ended January 29 the fuel oil inventories totaled 118,793,000 barrels, having increased about 400,000 barrels during the week, to a level 16.3 percent higher than one year previously. The demand for fuel oil has been running similarly higher.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 4 to 4¼ cents a gallon; 63 to 66 octane, 4⅜ to 4½ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; and 70 to 72 octane, 4⅞ to 5¼ cents.

Corresponding prices in the Chicago market were as follows: 3¾ to 4⅛ cents, 4 to 4⅜ cents, 4½ to 4⅝ cents, and 4½ to 5⅛ cents.

In East Texas the most common gasoline, 60-62 400 end-point, was priced generally at 4 to 4⅛ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4½ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅝ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were 4⅛ to 4⅜ cents and 4⅛ to 4⅝ cents.

Fuel oil prices were mostly un-

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 8	3,437,100	3,210,000	303,078,000	79,331,000	119,146,000
January 15	3,476,900	3,240,000	303,679,000	80,947,000	118,962,000
January 22	3,506,200	3,220,000	304,424,000	82,785,000	118,433,000
January 29	3,357,650	3,170,000	.....	84,844,000	118,793,000
January 30, 1937	3,194,050	2,995,000	†286,044,000	69,540,000	102,078,000
Change in past year...	+5.1%	+5.8%	+6.4%	+22%	+16.3%

* All time peak. † Stocks January 16, 1937.

changed. In the Chicago market range oil was priced from 4⅛ to 4½ cents a gallon. The No. 1 white oil was priced from 4⅛ to 4⅜ cents, and the No. 1 straw from 3⅞ to 4⅛ cents. No. 2 straw was 3⅝ to 3⅞ cents and No. 2 dark from 3⅝ to 3¾ cents. No. 3 oil was 3½ to 3¾ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 77½ to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 55 to 60 cents a barrel.

JOHN P. WHITEHILL, 88, who started in the oil business 70 years ago in Pennsylvania, died in Chelsea, Oklahoma, January 27 after an illness of several months.

Exports in 1937 gains nearly 50 percent over 1936

EXPORTS of petroleum and its products last year increased nearly 50 percent in value, as compared with 1936, contributing more than 10 percent of total United States exports, it was reported by the Department of Commerce.

Shipments of oil and oil products in 1937 were valued at $376,301,000, compared with $263,149,000 in 1936, the department announced.

Foreign trade of the United States last year, it was disclosed, was at the highest level touched since the beginning of the depression, with exports of $3,345,658,000, showing an increase of $889,680,000 over 1936, the highest since 1930 when they amounted to $3,843,181,000 and imports at $3,084,061,000 advancing over 1936 by $661,469,000 to reach the highest level since the 1929 total of $4,399,361,000.

A favorable trade balance of $261,597,000 was recorded for the year, almost eight times the favorable balance of $33,386,000 resulting from the 1936 trade, it was shown.

Causes of the increased imports in 1937 were simple, merely the purchase of larger quantities of foreign merchandise at higher prices, it was explained at the department, but the reasons for increased exports were more diverse, including improved levels of prosperity in many sections of the world, a worldwide heavy demand for war materials and concessions granted in various reciprocal trade agreements.

Analysis of the year's exports shows that shipments of crude oil aggregated 67,127,000 barrels valued at $96,432,000 against 50,313,000 barrels valued at $66,119,000 in 1936. Exports of refined products totaled 94,109,000 barrels valued at $253,493,000 against 71,402,000 barrels valued at $179,026,000, of which gasoline and other motor fuel accounted for 30,488,000 barrels valued at $84,921,000 against 22,727,000 barrels valued at $57,140,000, and lubricating oil for 11,546,000 barrels valued at $86,661,000 against 8,603,000 barrels valued at $65,433,000.

Imports of petroleum and its products showed only a moderate increase over 1936, totaling $44,586,000 against $40,570,000, with receipts of crude petroleum amounting to 27,311,000 barrels valued at $20,761,000 against 32,957,000 barrels valued at $23,248,000, it was shown.

Pampa, Texas.—Production of natural gasoline in the Texas Panhandle during 1937 amounted to 273,428,400 gallons as compared to 255,481,000 gallons the previous year. Forty-six plants are in operation. Gasoline output has been gaining since last July, and during December amounted to 25,636,000 gallons, or the highest level attained since January, 1936.

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 58 of this issue. This schedule will appear only in the first issue of each month.

Summary of Wells Completed in the United States Week Ending February 5, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	.....	.....	.....	.....	.....	.....	.....
Arkansas	5	4	.....	1	2,666	26	4
California	28	26	.....	2	26,758	129	123
Colorado	.....	.....	.....	.....	.....	2	2
Florida	.....	.....	.....	.....	.....	.....	.....
Illinois	8	7	.....	1	1,185	91	.....
Indiana	.....	.....	.....	.....	.....	6	23
Kansas	31	19	1	11	23,563	236	215
Kentucky	12	4	3	5	110	79	39
Louisiana	21	16	1	4	8,435	137	51
Michigan	15	8	.....	7	1,453	87	94
Mississippi	.....	.....	.....	.....	.....	2	.....
Montana	.....	.....	.....	.....	.....	5	13
Nebraska	.....	.....	.....	.....	.....	.....	.....
New Mexico	6	6	.....	.....	4,996	54	69
New York	1	.....	1	.....	.....	6	.....
Ohio	20	4	11	5	25	116	212
Oklahoma	50	30	3	17	6,708	253	314
Pennsylvania	4	1	2	1	1	27	7
Texas	247	185	11	51	288,192	1,389	1,365
Utah	.....	.....	.....	.....	.....	.....	.....
West Virginia	15	1	14	.....	1	108	75
Wyoming	.....	.....	.....	.....	.....	8	12
Total this week	463	311	47	105	364,093	2,761	2,618
Total last week	462	320	45	97	377,756	.....	.....
Total this year	2,761	1,838	276	647	2,234,273	.....	.....

Comparison of Permits Granted for New Wells

STATE	Week Ending Feb. 5	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	8	8	29	5	240
California	....	....	125	125	1,584
Louisiana	46	46	133	90	1,227
Kansas	24	24	187	209	2,663
Michigan	4	4	59	84	958
Oklahoma	33	33	208	244	2,711
Texas	306	306	1,384	1,533	17,238
Total	421	421	2,125	2,290	26,621

Crude Output Stationary

Texas and California have large gains that are offset in other sections to keep daily average unchanged and below bureau mark.

UNITED STATES crude oil production during the week ended February 5, remained at about the same level as in the previous week, when it averaged 3,319,175 barrels a day. That was 525 barrels less than in the previous week and 119,625 barrels daily less than the Bureau of Mines estimated demand for February.

A considerable increase in production in Texas and California, as well as a slightly higher output in Louisiana made up for sharp decreases in Oklahoma and Kansas.

Texas output was 18,075 barrels a day higher than in the previous week, averaging 1,227,500 barrels daily, which was 138,200 barrels less than the Bureau of Mines recommendation and 177,740 barrels less than the state allowable.

California last week averaged 726,100 barrels a day, 12,500 more than in the previous week, 32,400 more than the estimated demand, and 67,100 barrels more than the recommendation of the Central Committee of California Oil Producers.

Louisiana showed a gain of 5675 barrels, averaging 254,650 barrels daily, which was 15,250 barrels a day more than the federal allocation and 9950 barrels more than the allowable prescribed by the state.

Oklahoma output decreased 20,775 to 533,100 barrels a day, which was 36,600 barrels daily less than the Bureau of Mines estimated demand and 1900 barrels less than the state allowable.

Kansas showed a decline of 12,125 barrels, having averaged during the past week 179,950 barrels daily. That was 3550 barrels more than the Bureau of Mines recommendation and the state allowable.

New Mexico output decreased 2250 barrels to 105,050 barrels a day, which was 50 barrels less than the indicated demand but 50 barrels more than the state allowable.

McAllen, Texas. — Construction has been commenced on a six-mile gas line from the Santo Domingo gas area in southeast Starr County to the western terminus of the Hidalgo Gas Company's commercial Samfordyce line.

The line will connect with the company's Samfordyce supply and will form a reserve for commercial consumers in McAllen and Mission as well as providing additional gas for jetting oil wells in the Samfordyce field. Frank McCarthy is general manager for the company.

The Santo Domingo area has one producer, John H. Clopton's Roos & Bennett 1, south end of Share 1-A, Porcion 92, Camargo Jurisdiction. The well is producing through casing perforations at 2407-15 feet and made an estimated 15,000,000 cubic feet of gas through ¾-inch tubing choke.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Feb.)	State Allowable in February	BARRELS DAILY FOR WEEK ENDING	
			February 5	January 29
TEXAS—				
Texas Panhandle	.....	.....	71,900	65,100
North Texas	.....	.....	62,500	62,200
West Central Texas	.....	.....	30,800	27,350
West Texas	.....	.....	173,000	172,550
East Central Texas	.....	.....	78,000	76,600
East Texas Field	.....	.....	423,800	424,000
South Texas	.....	.....	207,000	208,400
Texas Gulf Coast	.....	.....	180,500	173,200
Total Texas	1,365,700	1,405,240	1,227,500	1,209,425
CALIFORNIA—				
Long Beach	.....	.....	58,000	57,500
Santa Fe Springs	.....	.....	41,000	41,000
Huntington Beach	.....	.....	36,500	36,700
Dominguez	.....	.....	31,000	30,000
Inglewood	.....	.....	15,500	16,000
Ventura Avenue	.....	.....	35,500	35,500
Seal Beach	.....	.....	7,500	7,800
Midway-Sunset	.....	.....	77,000	77,000
Elwood	.....	.....	7,600	7,600
Kettleman Hills	.....	.....	80,000	82,500
Mountain View	.....	.....	14,000	14,500
Playa del Rey	.....	.....	7,500	7,500
Wilmington	.....	.....	85,000	70,000
Others	.....	.....	230,000	230,000
Total California	693,700	*659,000	726,100	713,600
OKLAHOMA—				
Oklahoma City	.....	.....	114,025	134,025
Seminole Area	.....	.....	103,100	103,700
Crescent	.....	.....	7,975	8,750
Lucien	.....	.....	12,900	12,500
Fitts	.....	.....	69,850	69,025
Edmond	.....	.....	8,250	7,750
Moore	.....	.....	7,475	7,025
Others	.....	.....	209,525	211,100
Total Oklahoma	569,700	535,000	533,100	553,875
LOUISIANA—				
North Louisiana	.....	.....	80,650	78,475
South Louisiana	.....	.....	174,000	170,500
Total Louisiana	239,400	244,700	254,650	248,975
KANSAS—				
Ritz-Canton	.....	.....	5,200	5,275
Chase	.....	.....	6,650	6,700
Hollow-Nikkel	.....	.....	2,450	2,500
Sedgwick	.....	.....	3,925	3,850
Burrton-Haven	.....	.....	12,225	12,100
Lorraine	.....	.....	2,450	2,875
Russell County	.....	.....	32,575	32,250
Silica—West	.....	.....	13,600	17,025
Silica—South	.....	.....	2,750	7,725
Others	.....	.....	98,125	101,775
Total Kansas	176,400	176,400	179,950	192,075
NEW MEXICO	105,100	105,000	105,050	107,300
MICHIGAN	52,800	.....	49,000	49,300
ARKANSAS	36,800	.....	41,525	42,450
MOUNTAIN STATES—				
Wyoming	51,800	.....	50,100	49,200
Montana	12,400	.....	13,500	13,900
Colorado	4,400	.....	4,400	4,500
Total Rocky Mountain States	68,800	.....	68,000	67,600
EASTERN STATES—				
Pennsylvania Grade	.....	.....	77,600	76,800
Southern Illinois (New Pools)	.....	.....	25,400	25,900
Illinois-Indiana (Old Pools)	.....	.....	9,600	9,900
Others, Eastern	.....	.....	21,700	22,500
Total Eastern States	130,000	.....	134,300	135,100
Total United States	3,438,800	.....	3,319,175	3,319,700

* Recommendation of Central Committee of California Oil Producers.

CRUDE OIL PRICE SCHEDULES

(Figures Revised to February 4, 1938)

MID-CONTINENT GRAVITY SCALE PRICES (Posted January 28, 1937)

(Some fields of Mid-Continent have flat price postings, and are shown separately.)

Gravity	Okla.-Kans.	North La.-Ark.	Rodessa, La.-Tex.	North & W. Cent. Tex.	East Cent. Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Conroe Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	[4]Anahauc, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.90	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.92	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.94	.....	.....	.....
20–20.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.95	.96	.....	*$1.01	*$0.96
21–21.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.98	.98	.....	1.03	.98
22–22.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.01	1.01	.....	1.05	1.00
23–23.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.04	1.04	.....	1.07	1.02
24–24.9	*$0.98	*$0.90	*$0.93	*$0.88	.....	.....	.....	.....	.....	1.07	1.07	.....	1.09	1.04
25–25.9	1.00	.92	.95	.90	.....	.....	.....	.....	*$0.78	1.10	1.10	.....	1.11	1.06
26–26.9	1.02	.94	.97	.92	.....	.....	.....	.....	.80	1.13	1.13	.....	1.13	1.08
27–27.9	1.04	.96	.99	.94	.....	.....	.....	.....	.82	1.15	1.15	.....	1.15	1.10
28–28.9	1.06	.98	1.01	.96	*$1.03	.....	.....	*$1.20	.84	1.17	1.17	.....	1.17	1.12
29–29.9	1.08	1.00	1.03	.98	1.05	.....	.....	1.22	.86	1.19	1.19	.....	1.19	1.14
30–30.9	1.10	1.02	1.05	1.00	1.07	.....	.....	1.24	.88	1.21	1.21	$1.16	1.21	1.16
31–31.9	1.12	1.04	1.07	1.02	1.09	.....	.....	1.26	.90	1.23	1.23	1.18	1.23	1.18
32–32.9	1.14	1.06	1.09	1.04	1.11	.....	.....	1.28	.92	1.25	1.25	1.20	1.25	1.20
33–33.9	1.16	1.08	1.11	1.06	1.13	.....	.....	1.30	.94	1.27	1.27	1.22	1.27	1.22
34–34.9	1.18	1.10	1.13	1.08	1.15	*$0.96	*$0.91	1.32	.96	1.29	†1.29	1.24	1.29	1.24
35–35.9	1.20	1.12	1.15	1.10	1.17	.98	.93	1.34	.98	1.31	.....	1.26	1.31	1.26
36–36.9	1.22	1.14	1.17	1.12	1.19	1.00	.95	1.36	1.00	1.33	.....	1.28	1.33	1.28
37–37.9	1.24	1.16	1.19	1.14	1.21	1.02	.97	1.38	1.02	1.35	.....	1.30	1.35	1.30
38–38.9	1.26	1.18	1.21	1.16	1.23	1.04	.99	1.40	1.04	1.37	.....	1.32	1.37	1.32
39–39.9	1.28	1.20	1.23	1.18	1.25	1.06	1.01	1.42	1.06	1.39	.....	1.34	1.39	1.34
40 & Above	1.30	1.22	1.25	1.20	1.27	1.08	1.03	1.44	1.08	1.41	.....	1.36	1.41	1.36

* Minimum price and applies also to purchases of lower gravity.

[1] Conroe, Tomball, Satsuma, Raccoon Bend Deep fields.

[2] Upper Texas Gulf Coast, including Goose Creek, Spindle Top, etc., and some fields of Louisiana Gulf Coast, including Black Bayou, White Castle, Vinton, Hackberry, etc., except that top price for those Louisiana fields is $1.29 for 34 gravity and above.

[3] Choctaw, Darrow, Lockport, Iowa (Magnolia posting), Cameron Meadows, etc.

[4] Anahuac, Dickinson, Flour Bluff, Turtle Bay.

[5] Lower Texas Gulf Coast, including Refugio, Saxet, etc. Posted 7-6-37.

[6] Duval, Jim Hogg, Webb and Zapata Counties; Heyser, Placedo fields. Posted 7-6-37.

† Maximum price and applies also to purchases of higher gravity.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.90	1–28–37
Louisiana:		
Garden Island	1.37	1–28–37
Lafitte	1.24	1–28–37
Texas:		
East Texas	1.35	5–22–37
Talco	.73	1–28–37
Livingston, Cleveland	1.27	1–28–37
Hardin	1.15	1–28–37
Van	1.10	1–28–37
Pettus	1.37	1–28–37
Pecos County	.91	1–28–37
Pecos Shallow	.81	1–28–37
Luling	1.00	1–28–37
Lytton Springs	1.12	1–28–37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09	1–28–37

Michigan Prices

Central Michigan	$1.27	7–24–37

Middle West Prices

Lima	$1.25	1–28–37
Illinois	1.35	1–28–37
Princeton	1.35	1–28–37
Western Kentucky	1.40	1–28–37

Rocky Mountain States Prices

	Flat Price	Date Posted
Elk Basin	$1.30	1–28–37
Frannie Light	.70	11– 4–36
Frannie Heavy	.62	11– 4–36
Grass Creek Light	1.30	1–28–37
Grass Creek Heavy	.62	11– 4–36
Hamilton Dome	.57	11– 4–36
Big Muddy	1.23	1–28–37
Rock Creek	1.20½	1–28–37
Sunburst	.90	11–16–37
Lance Creek	.97	1–28–37
Osage	1.08	.....
Cat Creek	1.07	8–25–33
Cut Bank	1.35	6– 3–36
Pondera	1.05	9–29–33
Hogback	1.00	9– 8–33

Pennsylvania Prices

Bradford-National Transit	$2.20	12– 1–37
Sw. Pa. Pipe Line	1.88	12– 1–37
Eureka Pipe Line	1.82	12– 1–37
Buckeye Pipe Line	1.70	12– 1–37
Corning Grade	1.27	12– 1–37

Canadian Prices

Petrolia	$2.10	9– 9–33
Oil Springs	2.17	9– 9–33

Mexico Prices

F.O.B. Tampico; net; U. S. Currency, buyer pays tax	$0.95	Dec..,1937

Major Price Changes

	Penna. (Nat. Tr.)	Mid.-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19,1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
August 11, 1933	Up 10	.....	.....
August 24, 1933	.....	Up 10	.....
August 30, 1933	Up 15	.....	.....
September 6, 1933	Up 10	Up 10	Up 15
September 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25	.....	.....
January 4, 1935	Up 15	.....	.....
February 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
August 29, 1935	.....	.....	Cut *1
September 6, 1935	Up 5	.....	.....
October 29, 1935	Up 15	.....	.....
November 1, 1935	.....	.....	Up *28
November 18, 1935	Up 15	.....	.....
December 6, 1935	.....	.....	Up *9
January 9, 1936	.....	Up 10	.....
January 13, 1936	Up 15	.....	.....
February 26, 1936	.....	.....	Up †5
December 28, 1936	Up 12	.....	.....
January 28, 1937	.....	Up 12	.....
February 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
September 1, 1937	Cut 22	.....	.....
October 12, 1937	Cut 25	.....	.....
December 1, 1937	Cut 15	.....	.....

* Signal Hill 26 gravity. † Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interest.

Texas—2¾ cents or 2¾ percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

Montana—Two percent of gross value at well and ⅜ of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

Richfield plans extensive 1938 production program

Los Angeles. — Having completed major adjustments concomitant with its reorganization, Richfield Oil Corporation, during the past few months, has laid the ground-work for an extensive production development program to be executed during the ensuing year.

Considerable work already has been done along this line and the 1938 budget provides for an accelerated rate of production development. It is estimated that the company will spend from $2,500,000 to $3,000,000 for the acquisition of additional production during the present calendar year.

With over 600 new men added to its production department, Richfield, today, has 10 drilling crews in the field as compared with only one a year ago. Of the ten wells now being drilled, two are test wells and the other eight are located in proven territory.

The wells currently being drilled in proven areas include two in the Long Beach extension of the Wilmington field, two at Long Beach, one at Belridge, one at Elk Hills, two at El Segundo and one at Rincon. Tentative plans call for the drilling of 60 or more additional wells on proven property during 1938.

New wells completed since reorganization of Richfield on March 13, 1937, have increased the company's production from 17,000 barrels daily to 20,000 barrels daily at the present time.

However, this comparison does not show the correct relative importance of new production. Due to the normal decline in output from old wells, Richfield's current production, had no new wells been drilled, would be only approximately 13,000 barrels daily. This indicates that additional production obtained by the new company since last March totals around 7000 or an increase of over 53 percent.

During the past few months Richfield has been exceptionally active in its search for proven and prospective oil land. This activity is reflected by a material increase in the properties held by the company.

Total property now owned, in fee or leased, amounts to something over 100,000 acres. This compares with 51,788 acres as of March 13, last, an increase of approximately 100 percent.

Oil prospecting in Lincolnshire, England

An oil and mineral survey of an area of about 500 square miles in North Lincolnshire, England, has been commenced by the D'Arcy Exploration Company, Ltd., and is expected to continue about six months. Headquarters have ben established at Brigg, 16 miles southwest of Hull and 19 miles west of the port of Grimsby. The area lies inland from the East Coast from 20 to 30 miles, between Scunthrope and Market Rasen, which is 21 miles southwest of Grimsby.

The land is chiefly arable, with some low, rolling hills, and a small river valley. It includes Scunthorpe, with its thriving iron and steel industry, based on the underlying Frodingham vein of ironstone. The region geologically is one of deep-lying coal beds. Coal seams are worked at Thorne, 15 miles west of Scunthorpe, but are supposed to slope eastward and if they exist at Scunthorpe are too deep for profitable operation.

Very little actual oil or mineral prospecting has been done in this region, but some years ago a trace of petroleum was found mixed with water, believed to have seeped through a geological fault in the strata.

It is believed that oil in commercial quantities may be struck in the vicinity of the coal beds, oil which may have formed pools by leakage from the strata through geological shiftings known to have occurred, although it will be necessary to bore at least 6000 feet to reach them.

Tulsa.—Officers of Amerada Petroleum Corporation here will be moved to the Beacon Life building on or about May 1, it was announced last week. Present quarters in the Petroleum building are too small to accommodate the company, it was explained.

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted December 22, 1937). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo & Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain view	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$.80	$.79	$.78	$.79	$.80	$.76	....	$.80	$.76	$.76	$.77	$.78	....	$.70	....	....	$.70	$.70	$.70	....	$.75
15-15.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.75
16-16.9	.80	.79	.78	.79	.80	76	....	.80	.76	.76	.77	.78	....	.70	....	....	70	.70	.70	....	.75
17-17.9	.80	.79	.78	.81	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.77
18-18.9	.80	79	.78	.84	.80	.78	....	.82	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.79
19-19.9	.82	.79	.82	.87	.84	.81	....	.85	.76	.78	.77	.78	....	.70	....	$.70	.74	.74	.71	$.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	....	.88	.78	.82	.77	.80	....	....	....	.70	.78	.78	.72	.70	.85
21-21.9	.88	79	.89	.93	.93	.88	....	.91	.80	.85	.77	.84	$.78	....	....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	.98	.92	....	.93	.84	.89	.79	.88	.78	....	....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$.84	.96	.88	.93	.82	.92	.78	....	....	.80	.92	.90	.82	.76	.95
24-24.9	.99	91	1.00	1.02	1.06	99	.88	.99	.91	.96	.85	.96	.82	....	....	.84	.97	.94	.86	.79	99
25-25.9	1.03	95	1.03	1.05	1.11	1.03	.93	1.02	.95	...	.89	.99	.86	....	....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	...	92	1.03	.90	Elwood	....	.91	1.06	1.02	...	....	1.06
27-27.9	1.10	1.05	1.11	1.12	....	1.10	1.03	....	1.02	...	.96	1.06	.95	Terrace	$.84	.95	1.10	1.06	...	....	1.10
28-28.9	1.14	1.10	1.14	1.15	....	1.14	1.07	....	1.06	...	.99	1.10	.99	.88	.99	1.15	1.10	...	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	...	1.03	1.14	1.03	....	.92	1.02	1.20	1.14	...	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	....	....	...	1.07	1.17	1.08	F.O.B.	.95	1.06	1.25	1.18	...	....	1.21
31-31.9	....	....	....	1.24	Line	1.24	1.22	....	....	...	1.11	1.21	1.12	Ship	.99	1.09	1.29	....	....	....	....
32-32.9	....	....	....	1.27	....	1.27	1.27	Kettleman Hills			1.14	1.25	1.16	....	1.03	1.13	1.34	....	....	....	....
33-33.9	....	....	....	....	....	....	1.32	1.19			1.18	1.28	1.20	1.28	1.07	1.17	1.38	....	....	....	....
34-34.9	....	....	....	....	....	....	1.37	....	1.23	...	1.22	1.32	1.25	1.32	1.11	1.20	....	....	....	....	....
35-35.9	....	....	....	....	....	....	1.42	....	1.27	...	1.25	....	1.29	1.35	1.15	....	....	....	....	....	....
36-36.9	....	....	....	....	....	....	1.46	....	1.31	...	1.29	....	1.33	1.39	1.19	....	....	....	....	....	....
37-37.9	....	....	....	....	....	....	1.51	....	1.35	...	1.32	....	1.37	1.43	1.23	....	....	....	....	....	....
38-38.9	....	....	....	....	....	....	1.56	....	1.39	...	1.36	....	1.42	....	1.27	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	1.61	....	1.43	...	1.40	....	....	....	1.31	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	1.66	....	....	...	1.43	....	....	....	1.34	....	....	....	....	....	....
41-41.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.38	....	....	....	....	....	....
42-24.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.41	....	....	....	....	....	....
43-43.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.45	....	....	....	....	....	....
44-44.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.49	....	....	....	....	....	....
45-45.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.53	....	....	....	....	....	....
46-46.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.56	....	....	....	....	....	....
47-47.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.60	....	....	....	....	....	....
48-48.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.64	....	....	....	....	....	....

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Oil Field Near Hamburg More Prolific than Nienhagen

Exploratory drilling which has been going on for some months in the vicinity of the Hamburg suburb of Bergedorf on the north bank of the Elbe river has finally reached the point where the geologists in charge of the work predict that the field which has been discovered may easily replace the Nienhagen field in Hannover, which now furnishes about 75 percent of German domestic crude oil, as the principal German oil field when it goes into production.

On December 18, 1937, Well No. 3 in the Bergedorf field, within sight of the Bergedorf railroad station, blew in at about 2280 feet. From studies of the geological formation, it was not expected that oil would be struck until the well was 60 or more feet deeper and difficulty was experienced in bringing the well under control, some of the pipe being blown out. The well has again spouted but it should shortly be definitely under control, according to reliable reports.

Drilling of Wells

After preliminary geological work, a well was sunk at Bergedorf last summer and oil was struck in October at about 2300 feet. The flow was not great and the well was promptly capped pending further exploration. A second well was driven through the proven oil stratum and is now being sunk deeper in the hope of finding additional strata below.

Extent of Field

Well No. 3 is said to give indications of being a heavier producer than any well previously brought in in Germany. Estimates as to its capacity are premature until it actually enters into production but it is believed that it will run from 100 to 150 metric tons a day, about one-tenth of the entire present German production from all wells in all fields. Wells No. 1 and No. 3 are two kilometers apart and petroleum authorities consider that the producing area will be considerably lower. The stratum to which Wells No. 1 and No. 3 have been sunk is about 150 feet thick.

Prior to the World War there was a natural gas well near Bergedorf which was abandoned later but apparently no serious consideration was given to the possibility that mineral oil might also be found there until the drive for self-sufficiency in Germany began under the current Four-Year Plan. Nienhagen and other producing fields contribute sufficient oil for about ten percent of German domestic needs. While domestic production is, of course, added to materially by the distillation of oil from coal, Germany is still decidedly dependent upon its imports of mineral oil and any developments which may lessen this dependency are very much desired by the Reich authorities.

Ship tools for wildcat in northeastern Iran

Miscellaneous tools and other equipment for use on the first wildcat to be drilled by Amiranian Oil Company on its concession in northeastern Iran were scheduled to leave the United States February 5 for a port on the Persian Gulf. From there to the location the equipment will be shipped partly by rail and partly by truck. John Lovejoy is president of Amiranian Oil Company, a subsidiary of Seaboard Oil Company of Delaware, a corporation also headed by Lovejoy.

Austrian crude oil output on increase

Austria, one of a number of nations which have long looked forward to independence in the matter of petroleum supplies, appears rapidly approaching that goal as the October production figures brought the total yield for the first 10 months of 1937 up to 27,522 metric tons, almost four times the 7423 metric tons produced in Austria during 1936. Information from Vienna is that the trend may continue upward for some time.

Current production in Austria, rated at 130 metric tons daily, is about 13 percent of domestic requirements, which, according to Henry E. Stebbins of Vienna, are running at about 1000 metric tons per day. The present rate of production will give Austria a total recovery for 1937 amounting to 35,452 metric tons, which compares with the estimate of 36,000 metric tons made by Gardner Richardson of Vienna as soon as figures for the first 7 months were available.

The share of Austria's petroleum imports enjoyed by American exporters is steadily increasing because of the difficulty in obtaining Roumanian oils. The United States is furnishing 79 percent of Austrian lubricants, 5 percent of crude run through Austrian refineries, 15 percent of the gasoline used in that country, and 7 percent of the kerosine, figures released by the Austrian official foreign trade bureau indicate.

Colombia and Peru output are at peak

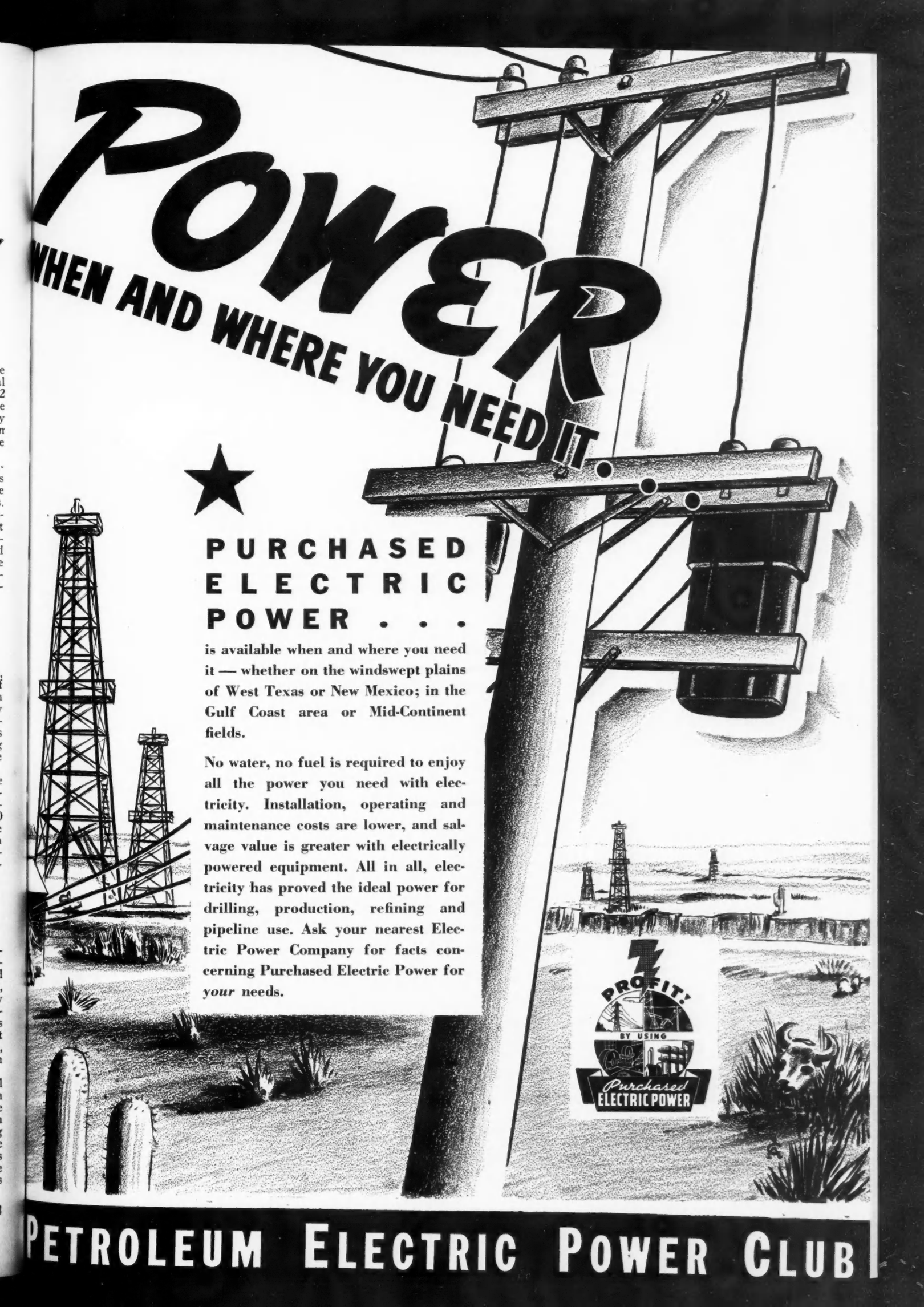
International Petroleum Company, Ltd., reports November production of crude from its Colombian and Peruvian holdings at 2,979,298 barrels, or a daily average of 99,309 barrels. This represents a new peak in the company's operations, the previous high being 97,882 barrels a day which was made during October.

November production brought the company's daily average for the calendar year to date to 95,698 barrels, compared with a daily average of 94,690 barrels at the end of October. The month's production was divided with 1,797,625 barrels from Colombian holdings and 1,181,673 barrels from Peruvian holdings.

Alberta production gains steadily

Despite proration which was inaugurated in the Turner Valley field September 12 and which has since choked production to 35 percent of potential, Alberta oil production has made steady monthly gains during all of 1937, official Provincial government records show. November production, the last month for which figures are available, totaled 326,677 barrels, an all-time high for the province.

Compilation of December figures will reveal 1937 production to be more than twice that of the previous year. In June of the year just closed, production doubled that of the corresponding month of the preceding year for the first time, and since June production has gained at such a rapid rate that the November total was almost three times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that of the corresponding 1936 month.

Following are official Alberta production figures in barrels and by months for the past three years: January—110,424 in 1935; 103,952 in 1936, 127,977 in 1937; February—98,753 in 1935, 96,077 in 1936, 140,415 in 1937; March—108,082 in 1935, 101,857 in 1936, 161,832 in 1937; April—99,850 in 1935, 94,230 in 1936, 172,608 in 1937; May—105,488 in 1935, 97,387 in 1936, 175,997 in 1937; June—105,183 in 1935, 99,041 in 1936, 191,634 in 1937; July—102,115 in 1935, 122,771 in 1936, 226,000 in 1937; August—102,741 in 1935, 124,287 in 1936, 271,898 in 1937; September—109,143 in 1935, 120,210 in 1936, 281,154 in 1937; October—107,901 in 1935, 120,638 in 1936, 325,723 in 1937; November—103,952 in 1935, 113,794 in 1936, 326,677 in 1937; December—110,118 in 1935, 124,979 in 1936, figure for 1937 not available. Total—1,263,750 in 1935, 1,319,223 in 1936, 2,401,915 in 1937, exclusive of December.

Mexican Eagle given new concessions in Mexico

Mexican Eagle Petroleum Company's and the federal government's pact for coordinated development of the Poza Rica zone, Vera Cruz State, became effective last week, and simultaneously the administration granted the company confirmatory concessions that are nontransferrable to explore and exploit oil in the belt, with full recognition of rights the company acquired prior to enactment of the oil law of 1917.

Richmond Petroleum Company was denied an injunction by the Federal Supreme Court against action of the Mexican government in incorporation into the national oil reserves, lands it held along three streams in Vera Cruz State. The court held that the government had acted legally as these lands are national property because they are along brooks whose flow is permanent.

Wait permission to drill for oil in India's Sind

Karachi, India, still waits word from Calcutta as to whether the government will grant licenses for exploratory drilling in the Sind desert applied for by two large oil companies. At the time of the application it was believed the government's permission would be withheld pending accumulation of more data from preliminary geological investigations.

Paul Hopper, petroleum and coal section of the foreign bureau at Washington, D. C., informs us that it has been the fond hope of the Indian government and business that one day oil would be discovered in Sind. The Sind desert, he says, lies in the oil belt, and certain geologists have always maintained that oil someday will be found there.

Nevertheless, oil companies with ample financial resources have considerable money prospecting right through Sind without any real encouragement. Oil showings have been encountered, but none in commercial quantities. One of the larger companies operating in the Far East had a geological staff stationed at Karachi for a number of years, but has withdrawn it.

Small Canadian operators not asking for tariff

The Dominion Tariff Board, currently conducting an inquiry into the Canadian oil industry which was precipitated as a result of rapid development and subsequent proration in the Turner Valley field of Alberta, was told that independent producers desired no protective tariff on oil products entering Canada from the United States. Independent operators, said W. S. Campbell, spokesman for the Petroleum Producers' Association, want "no increase in tariff on refined or crude products," but a program "to reach eastern markets through cooperaton of the Governments and railways, the producers and refiners."

Campbell's statement came when representatives of several consumers' organizations and of the Provincial governments of Saskatchewan and Manitoba appeared at a board hearing held in Calgary to protest any action by the Dominion government that might raise the cost of petroleum products. J. J. Frawley, K. C., representing the Alberta government, also assured those protesting a possible tariff increase that "at no time has the Alberta government been asked to seek increased duties on oil imports into Canada."

The board will continue its hearings at Ottawa, at which time briefs will be presented by the Association, Imperial Oil Company, Ltd., British American Oil Company, Ltd., and other interested parties. Campbell said producers will center their fight on reduced freight rates to eastern points and exercise of dumping duties on refined products from Montana, that the only strictly tariff matter to be pressed by operators would be in an attempt to lower the duty on drilling equipment and supplies brought into Canada.

Strenuous opposition to a tariff on crude was expressed by L. L. Plotkin, president of Lion Oils, an independent refining company, who charged that the Imperial and British American companies control more than 95 percent of Turner Valley production through ownership by Royalite Oil Company, Ltd., Imperial subsidiary, of the only pipeline linking Turner Valley to Calgary and contracts with producers, leaving less than 5 percent of the field's production available for independent refineries who must truck crude to their plants or railway shipping centers at a considerably higher cost.

Plotkin condemned a situation under which one company could dictate crude prices and declared that distress conditions in Montana which R. V. LeSueur, vice president of the Imperial company, said existed in the Montana fields and made necessary a cut in the price of Turner Valley crude did not exist. In further discussion on the relation of Montana production to the Alberta crude marketing situation, Hon. G. H. Sedgewick, C. M. G., chairman of the board, expressed an opinion that Montana was not "very much of a threat" to Alberta refiners. If pipeline facilities were made available, the superiority of Turner Valley crude over the Montana product would guarantee a demand, Plotkin said.

The Lion Oils official said that West Canadian independent refiners would be able to protect themselves if no high tariff were put on imported crude, and if the Western Canadian market could not absorb all the refined products made in Alberta, British Columbia and the western United States would provide another outlet. Depletion of the California fields, he declared, was bringing an increase in the prices of refined products in western states.

Robert Wilkinson, president of the National Petroleum Corporation, an independent producing company, told the board that because he refused to enter into a contract with the Imperial or British American companies, he had 30,000 barrels of crude in storage in the field and a well with a potential of 1050 barrels daily was choked to between 325 and 350 barrels. He said that he once signed a contract with the major companies "and regretted it." Unable to get his oil from the field except by truck to Calgary or High River, Wilkinson said he asked Royalite to transport his crude to Calgary through its line but was informed that the company was unable to handle it. Frawley explained that the Royalite company conveyed only oil under contract to it, the parent Imperial company or the British American company.

Before opening the Calgary hearing, members of the tariff board were escorted on a tour of the Turner Valley field and refineries at Calgary by representatives of the Provincial department of lands and mines. In the party were Mr. Sedgewick; Milton N. Campbell and Charles P. Hebert, members of the board; J. R. MacGregor, secretary to the board; Mrs. Phyllis Turner, chief research economist with the board; F. A. Russell, of the Dominion customs department; F. G. Cottle, board of public utilities commissioners; Hon. N. E. Tanner, Alberta minister of lands and mines; C. W. Dingman, director of the petroleum and natural gas division of the department of lands and mines; D. W. King, deputy minister of trade and industry; J. Grant Spratt, petroleum engineer for the department of lands and mines, and Frawley.

Shell gets large concession in Java

De Bataafsche Petroleum Maatschappij (Royal Dutch, Shell), recently was granted a concession covering about 1,990,820 acres in northwestern Java, according to a bill introduced in the Peoples Council of the Dutch Indian government.

The above company, incidentally, is the greatest producer of crude oil in the Netherlands Indies.

El Aguila completion

Production of Mexican Eagle Oil Company (El Aguila) has been increased with completion of El Plan 52 in El Plan fields, southern Vera Cruz state, for 666 barrels daily at 2625 feet.

J. W. PINKERTON, petroleum engineer with Standard Oil Company of Venezuela, is due to arrive in Venezuela soon, having recently sailed from New York.

World's Highest Elevated Field Is 8800 Feet Above Sea Level

By FRANK B. TAYLOR, Staff Writer

LOCATED squarely on the backbone of the North American Continent, and only a stone's throw from the Continental Divide, an oil pool has been developed at the record elevation of 8800 feet above sea level. The field is in extreme southern Archuleta County, southwest Colorado, a short distance north of the New Mexico line. The vicinity is rugged mountain country, practically virgin in its wilderness. Peaks of the Rockies lift to heights of 10,000 to 12,000 feet to surround the wooded slope on which the pool is located.

Interesting Geology

Since the days of the early prospectors of the area, oil seeps were known to exist, and it is probably through this source that study was primarily directed to particular sections. The problem was not to find the crude, which was in visible geological evidence, but to find a reservoir or accumulative formation in which oil still remained in spite of mountain faulting, ruptured formations, exposed and eroded sands and strata which could no longer retain original pressures. These conditions are prevalent in mountainous regions and have resulted in the loss of untold millions of barrels of crude through drainage by fissures or at exposed flanks. In some instances in Colorado surveys have indicated the location of previously existant pools, and much of the asphalt and shale oil of the state is secondary accumulation.

Geological study of formations and surface indications on the Banded Peak Ranch of the Wm. E. Hughes Estate, upon which the producing field is located, led to the discovery of an anticline. The first test was spudded on or about July 1, 1935, but was a failure so far as production was concerned. However, from the formations encountered, as well as a previous determination to thoroughly test the structure, a second well was started which proved commercial production in the upper Dakota sand series. This well initially tested about 50 barrels of crude per day but was deepened to increase this figure greatly. The last well drilled made 1920 barrels per day into lease tanks on a swabbing test and it was impossible by this means to lower the top of the fluid column below about 365 feet from the bottom of the hole.

Depth to the top of the laminated section of the Dakotas, the sands from which the field's production is coming, is not uniform, but may average around 1200 to 1400 feet from the surface. Crude carries no sulphur content and is 31.9 degrees gravity. In two wells that penetrated the productive zone, about 230 feet of saturation was proven. Seven distinct strata were cored within the Dakota series. Due to the irregularity of the topography of the pool the elevation of the locations of the various wells range from an approximate low of 8300 feet to a high of 8800 feet above sea level.

To date there have been 13 completions in the field, seven of these having been placed on pumping equipment. No

A detailed and unusual view of Mountain Majesty in the vicinity of Banded Peak Ranch. Evergreens frame Banded Peak, rising in the distance to a height of 12,760 feet. Although taken in the warmer months, snow is still visible in the canyons and beneath the granite crags of the horizon. The oil field is on the near slope, wooded thickly with aspen that hide the equipment.

Crossing the Continental Divide with the Banded Peak-Chama pipe line.

wells are drilling at this time. Machine equipment has been used for the development and "A" frames have been constructed above the completed wells.

Transportation System

Over 5000 feet of gathering lines have been installed connecting producing wells with a 4-inch, gas welded, transmission line to Chama, New Mexico. The gathering system is 100 percent gravity flow. Piston type line pumps

Moving boilers on sleds, 20 miles to the field.

are in use on the field—Chama main line which crosses the Continental Divide and the Colorado-New Mexico state line to terminate at a rail station on the New Mexico side. First delivery into a tank car was made April 28, 1937.

In addition to the 5000 feet of gathering line, the same length of high tension power cable has been installed. All equipment is electrically operated including the installed pumping units. Two 150-horsepower boilers generate steam for the steam turbine-generator units. As a precautionary measure it is possible to turn steam directly into the line pumps, otherwise they are electrically operated.

Pumping equipment being used on the wells consists of conventional lift jacks, direct-connected to 5-horsepower motors. These are operated at an average stroke of 36 inches in length and at a rate of approximately 20 strokes per minute. A standard pump barrel is used and wells are equipped with 2-inch tubing. The weight of each of these

Drillers camp in winter weather.

units is about 4200 pounds, complete.

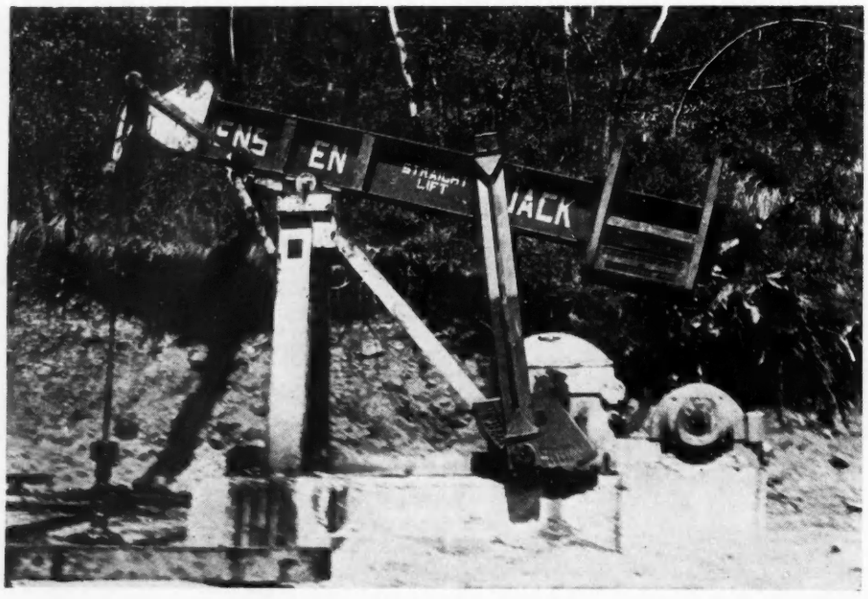
Transportation of equipment into the field from the rail head presented a number of difficulties. Extreme colds of winter make operation during that season difficult, and some trouble had been experienced with formation of paraffin on rods and pumping equipment. Much of the field installation, particularly the power house, boiler room and related machinery was installed during winter months.

Government seeks bids on Wyoming royalty oil

Bids for purchase of royalty oil accruing to the United States from leases on government land in the Lance Creek, Wyoming, oil field will be opened by the Interior Department February 28.

Bids are invited in separate lots for all royalty oil from formations from the surface to and including the basal Sundance, and for royalty production from the Minnelusa formation for periods of one, three or five years beginning April 1, next.

For the first 11 months of the last year, the average monthly government royalty production from formations from the surface to and including the basal Sundance was approximately 16,800 barrels. No average figure is available for royalty production from the Minnelusa formation, but in October it was 9100 barrels and in November 9500 barrels. Range of gravity for the year was from 36 to 47 degrees A.P.I., it was said.



Seven of the 13 wells drilled in Banded Peak field are equipped with pumping installations: lift jacks direct-connected to 5-horsepower electric motors. Current is supplied to the field from a central steam turbine-generator unit.

Determination of porosity of oil sands important

Information regarding the pores or voids in reservoir rocks is vitally important in the scientific extraction of petroleum from natural underground reservoirs, states the United States Bureau of Mines in a report recently issued describing the bureau's method of determining porosity of sandstones and other porous rock cores taken from oil and gas wells. The report also gives in tabular form the results of several hundred porosity determinations for oil sands in fields of 11 states.

Differs from Other Methods

The method of determining the effective porosity of oil sands, as developed at the Petroleum Experiment Station of the Bureau of Mines, Bartlesville, Oklahoma, falls within the general classification of gas-expansion methods. It differs in various respects from others of the gas-expansion type. Pressures from 40 to more than 200 pounds per square inch are used, rather than atmospheric pressure; also the gas is expanded to atmospheric pressure and the volume measured rather than expanded to a definite volume and the pressure measured.

The Apparatus

The apparatus consists of a pressure bomb in which the test specimen is placed, equipment for measuring pressure, and a burette into which the gas is expanded and measured at atmospheric pressure. The use of a deadweight gage for measuring pressure is desirable. The pressure bomb consists of a steel cylinder, inside dimensions of which are 1 inch by 1⅞ inches. The cap or cover of the bomb fits with a ground joint and is held tightly in place with a clamp.

It is desirable to have the volume of free space in the bomb as nearly equal as possible to the bulk volume of the test specimen. This is accomplished by inserting in the bomb a number of steel disks having approximately the same diameter as the inside of the bomb, or other solid material, such as glass beads. The burette is graduated in tenths of milliliters, and has a capacity of 100 milliliters. Bomb and burette are operated in constant temperature water baths.

Step by Step

The report describes clearly, by reference to an illustration, the step by step procedure for operating the instrument and shows the method of calculation whereby porosity values, expressed in percent, are obtained. Typical examples illustrate the application of the method, and tables assist the engineer in making necessary computations.

The authors conclude that probably the greatest advantage of the method is that the test specimen is not affected in any way by the determination and is available for other tests; or, if it is desired, check porosity determinations may be made.

The porosity values given in the report should benefit engineers and others in their individual studies of oil and natural-gas field problems.

Copies of R. I. 3352, A Method of Determining Porosity: A List of Porosities of Oil Sands, by D. B. Taliaferro, Jr., T. W. Johnson, and E. J. Dewees, may be obtained upon request, without charge, from the Information Division, Bureau of Mines, Washington, D. C.

MAIN FRACTIONATOR

DIAMETER 17′ 0″

LENGTH 62′ 2″

WEIGHT 285,000 lbs.

FABRICATED AND SHOP ASSEMBLED

THE PETROLEUM IRON WORKS COMPANY OF TEXAS

BEAUMONT, TEXAS

OKLAHOMA FIELDS

Start community deep test in Fox shallow pool.

* * *

New Ramsey pool, Payne County, to be drilled rapidly.

Tulsa.—Testing of the deep Oolitic lime areas of the shallow Fox pool, Carter County, was widened last week when Carter Oil Company staked location in C NW SW 36-2s-3w, the southwest edge of the pool. It will drill Cusher 1 as a community venture. The test is 2 miles southeast of Ruth Williams 1, discovery deep producer, and a mile southeast of Gulf Oil Corporation's Lester 7, recently started, in which Carter Oil Company is interested. This with other developments in southern Oklahoma kept that area at the forefront in field development for the week.

Further testing has been ordered for Indian Territory Illuminating Oil Company and Foster Petroleum Corporation's Drumm 1, C N½ SW SW 32-2s-17w, in the Frederick area of Tillman County. The well was previously ordered plugged when salt water came into the hole at 3843 feet. Operators will drill deeper, considering the lower formations may possibly be productive.

Another test in the area, an old well, was cleaning out preparatory to drilling deeper. Barney Cockburn's C. F. Nichols 1-A, SEc 28-2s-19w, has an old depth of 3008 feet, and will be carried down for a test of the Canyon series, to be made with cable tools, with the new contract depth set at 4200 feet. Canyon lime is the producing formation in the area.

Gulf Oil Corporation announced intentions to drill deeper at Smith Estate 1, C SW SW 26-2s-3w, recent producer for the Oolitic lime area in the Fox pool of Carter County. It will be deepened in an effort to eliminate trouble caused by the extreme coldness of the production, which has been freezing in the lime. The well is flowing through ½-inch choke and is bottomed at 7773 feet. It will be carried to approximately 7798 feet.

Gulf Oil Corporation was going ahead with operations at 4 other tests in the immediate area. Garrett 8, C NW SW 27-2s-3w, was digging cellar; Johnson 2, C SE NW 27-2s-3w, was starting derrick; McClure 2, C SE NE 28-2s-3w, was cementing the cellar, and Gulf Oil Corporation and Carter Oil Company's Lester 7, C NW NW 35-2s-3w, was drilling below 645 feet in shale. East offset to the discovery well, Wirt Franklin Petroleum Corporation's Ruth Williams 1, C NW SE 27-2s-3w, was moving in materials.

Two important tests were being started in the Tussy area of Garvin and Carter Counties. Skelly Oil Company's Gibson 1, SW NW SW 29-1n-3w, in Garvin County and 1 mile north of the pool, was digging cellar and laying water lines. Direct south offset to production in the pool proper will be Skelly Oil Company's Theo. Miller 3, SW NW NE 5-1s-3w, in Carter County, which was rigging up rotary tools.

In Grady County, south of Bradley, Gulf Oil Corporation was circulating to overcome a caving hole at Thomas 1, SW NW NW 14-4n-5w, at 10,225 feet. It was circulating at 10,195 feet. It is the fifth well in the state to go to the 10,000-foot level. Contract depth is 11,000 feet.

Tulsa District

Development of the new Ramsey pool of Payne County was going ahead at a rapid pace as the three offsets began work. Mid-Continent Petroleum Corporation et al's Brandon 1, SEc NE 13-18n-1e, west offset to the discovery well, was drilling below 3280 feet, and Columbia Wetzell 1, NWc SW 18-18n-2e, south offset, was drilling below 2750 feet. Carl Wetzell 1, NEc SE 13-18-1e, southwest offset, cemented 13-inch casing at 886 feet and was waiting on cement with the hole at 950 feet.

It was reported Marydun Oil Company was taking over operations at Sagamore Drilling Company's Moore 1, SE SW NW 17-18n-1e, 5 miles west of Ramsey 1.

Phillips Petroleum Company continued making hole at Becker 1, NE NW SW 8-5n-10e, southwest of Calvin in Hughes County, which was drilling below 6222 feet in hard sand. Early in the week, the well cored from 6040 to 6040½ feet for no recovery. Another core from 6050 to 6059 feet had an 8-foot recovery of dry sandy dolomite, with the last 10 inches tasting salty. Last core, from 6108 to 6116 feet, had a recovery of 1 foot 3 inches of sandy shale and dolomite.

In the Jesse pool of Pontotoc County, Mid-Continent Petroleum Corporation was to complete Statler 12, C N½ N½ SW 2-1n-7e, in the Hunton lime instead of the bromide as was the case in other wells on the lease. It had top of the lime at 3766 feet and a core from 3767 to 3783 feet had a 16-foot recovery consisting of 16 feet showing oil. Total depth is 3822 feet.

Oklahoma City Sector

In the Lamont pool of Grant County, Carter Oil Company et al's Barclay 1, C EL SE NE 17-25n-3w, was preparing for a drill-stem test at 5442 feet in Wilcox sand. After finding a small show of oil from 5425 to 5430 feet, a drill-stem test was made with packer set at 5418 feet. Opened for 30 minutes, the test showed 15 feet of drilling mud and 180 feet of salt water. A second test was a failure.

Rumors persisted toward the end of the week that Magnolia Petroleum Company would abandon Reynolds 1, NWc SE 19-25n-3w, last reported at 6236 feet in Wilcox sand. It is 2 miles northwest of the Lamont pool.

H. R. Hollenback et al's Clark 1-A, NWc 31-24n-6e, southeast of Waukomis in Garfield County, remained shut down at 7336 feet. It was reported the well would be plugged back to the Marshall sand between 7260 and 7280 feet for tests of showings had there. A core from 7328 to 7333 feet had a 5-foot recovery of hard white sand.

Ohio Oil Company last week completed Knight 1, SE NE SW 12-17n-1w, in the Langston pool of Logan County, for a potential of 609 barrels of oil in 24 hours, producing through tubing. Production, coming from 5088 feet in Wilcox sand, was accompanied by 1,700,000 cubic feet of gas, and had a bottom-hole pressure of 873 pounds.

Harper & Turner's Sears 1, C W½ NW NW 13-9n-2w, northeast of Norman in Cleveland County and 4 miles southeast of Moore pool, was plugging back to whipstock by lost drill pipe. It had drilled to 7489 feet in Simpson.

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OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ATOKA COUNTY—		
Malernee, DOK Land & Cattle Co. 2-A, se se se 35-2s-13e	*	4504
BECKHAM COUNTY—		
Westoak Gasoline Co., Anderson 1, cnw¼ 15-9n-25w	*	3265
CADDO COUNTY—		
Magnolia, Hedlund 7, se sw ne ne 11-5n-9e	175	3872
Ray Stephens, Griffen 2, se ne se 27-6n-10w	1270	4364
CARTER COUNTY—		
Gulf Oil Corp., Berry 2, nw ne nw 5-1s-3w	32	3386
Roy Kyle, Daugherty 5, nw sw se sw 17-4s-2w	31	1490
Shell, E. T. Richards 9, sw ne ne sw 9-4s-3w (pb 1138)	8	1141

Company, Well and Location	Init. Prod. Bbls.	Depth
CREEK COUNTY—		
Sinclair Prairie, Estate Land Co. 1, ne nw nw 10-17n-7e	6	2700
Chas. Beal et al, John King 1-B, c ne½ sw sw 17-18n-9e (pb 2630)	¶1	3010
GRANT COUNTY—		
Carter Oil Co., Booher 1, w½ nw sw 16-25n-3w (pb 5424)	1131	5432
HUGHES COUNTY—		
Phillips, Emma 2, e½ se nw nw 8-6n-8e (pb 4151)	117	4154
Ellison & Nix, Metro. Life 1, c ne ne 14-7n-9e	*	4136
JEFFERSON COUNTY—		
Palmer & Palmer, Goza-Grayson 4, sw se sw 19-6s-5w	25	1539
KAY COUNTY—		
Helmerich & Payne, Scott 1-A, se se ne 20-28n-1w (pb 3600)	*	3716
LINCOLN COUNTY—		
Mid-Continent, Vinson 1, sw ne se 4-13n-6e	175	4245
Summitt Drlg. Co., Thomas 2, nw ne nw 2-14n-2e	768	5122
Magnolia Pet. Co., Ross 5, se sw se 2-14n-3e (otd 4986)	30	4232
Wagnor & Jones, May 1, sw sw se 10-14n-6e	46	3018
Wilcox O&G, Lycon 1, sw sw sw 11-14n-6e	35	2973
MURRAY COUNTY—		
Myers & Greenup, Arbuckle Roy 1, nw nw ne 18-2s-3e	*	40
MUSKOGEE COUNTY—		
McCormick, Gidney 1, c e½ se sw 15-15n-18e	*	1036
NOBLE COUNTY—		
Stanolind and Amerada, Henn 2, sw se ne 32-20n-2w	140	5143
OKFUSKEE COUNTY—		
Mead Prod., Smith 1-A, ne ne ne sw 10-12n-11e	*	3592
W. B. Pine, Davis 1, ne nw ne 9-13n-10e	*	3420
OKLAHOMA COUNTY—		
Clark & Co., Pahlow 1, se nw sw 15-12n-3w	899	6501
Southwest Co., Trasper 1, ne ne ne se 35-12n-3w	240	6387
OKMULGEE COUNTY—		
E. Smith, Spaulding 1, sw sw ne ne 1-14n-12e	35	2210
Mid-Continent, Thompson 2, n½ ne sw 19-15n-11e (otd 2595)	25	3080
B. & H. Oil, Brady 1-A, sw sw sw 35-16n-13e	*	1102
OSAGE COUNTY—		
Gilmont Oil Co., 4, c s½ n½ s½ nw¼ 29-20n-11e (pb 2315)	¶1	2339
Neeley & Wolfe 1, nw sw nw se 18-22n-12e	10	1716
North Avent Unit, 55, sw ne sw nw 32-24n-12e	1	1714
Cortez Oil Co., 10, ne sw sw 24-25n-11e	12	1678
PAWNEE COUNTY—		
O. H. P. Thomas, School Land 2, se nw ne 36-20n-9e	*	2132
PONTOTOC COUNTY—		
Mid-Continent, Statler 11, ne sw sw 2-1n-7e	¶23	4571
Clark-Cowden, Mayhue 1, sw ne se 20-2n-6e	60	3293
Simpson, Wooley 6, nw nw sw 27-2n-7e (pb 4221)	151	4276
SEMINOLE COUNTY—		
Bryan Pet., Greathouse 1, sw ne se 4-7n-6e	100	2853
Smith, Huddleston, nw ne nw 32-7n-6e	60	2968
J. F. Smith & Commercial, Sparks 1, ne nw se 32-7n-6e	584	2936
Smith, Harriman 1, ne sw sw 33-7n-6e	327	2893
Texas, Jefferson 4, sw sw ne 26-5n-7e	210	3880
STEPHENS COUNTY—		
Carl Carter, Warden "B" 3, ne se ne nw 34-1s-5w	*	995
Gulf Oil, L. Sims 13, se se nw 13-2s-4w	*	402
TILLMAN COUNTY—		
Cavin et al, Dan Sutherland 1, sw sw nw 35-4s-16w	*	44
Tom Walker, Bowman 1, sw sw nw 10-4s-17w	*	200
TULSA COUNTY—		
Duffield, Coonhead 6-B, ne ne ne se 1-17n-12e	5	1316
Somerset, Withers 1-B, se se se se 26-17n-12e	*	2330
Cummings, Bunger 7, c e½ e½ nw 27-17n-13e	*	1992
R. E. Downing, Sandger 1, c w½ nw¼ ne 31-17n-14e	*	1437

*Failures; †Junked; ¶Million cu. ft. gas.

KANSAS FIELDS

McNaughton field extended mile southwest.

* * *

Andover field carried into Butler County.

Wichita. — Although no new areas were opened in Kansas last week, two pools were given extensions and a third was apparently to be enlarged before the end of the seven-day period. West of the Graber pool of McPherson County, a test found Hunton lime nonproductive, and in the area between the Davidson and Beaver pools of Barton County, a wildcat was preparing to test Lansing lime. In northeastern Cowley County, a new producer furnished incentive for further testing in a pool inactive for nearly two decades.

Atlantic Refining Company and Phillips Petroleum Company's Lyons 1, C EL NE 28-24s-13w, last week extended the McNaughton pool of Stafford County one mile southwest, producing from Siliceous lime between 4072 and 4079 feet. Total fill up was 3800 feet with oil in 10 hours, and a swabbing test was started. The same companies drilled the last extensioner for the pool, their McNaughton 1, NWc 27-24s-13w, northwest of the new well. It pushed producing limits three-quarters of a mile west.

Extending the Andover South pool of Sedgwick County over the line into Butler County, National Refining Company's Elmer Pray 1, SW NW SW 31-27s-3e, had oil slopping over top of the casing last week while a sand pump was being run. Previously bottomed at 3106 feet in Wilcox sand, the well was carried ahead one foot and filled 2600 feet with oil. Top of the sand was at 3099 feet, and at the first total depth the well filled 300 feet with oil in 30 minutes. Operators were saving 14,000,000 cubic feet of gas encountered in Stalnaker sand.

May Enlarge Burnett

Next in line for extension appears to be the Burnett pool of Ellis County, opened last year. Duwe, Farris and Colonial Oil Company's Hadley 1, SE NE SE 12-11s-18w, one mile south of the pool, was preparing to drill in after finding a saturated core between 3130 and 3145 feet, the total depth. Casing was set at 3125 feet. The pool proper was opened by Earl Wakefield et al's Burnett 1, 1-11s-18w, completed for 1890 barrels of oil at 3572 feet in Siliceous lime.

In the area between the Davidson and Beaver pools of Barton County, both Siliceous lime fields, Sinclair Prairie Oil Company's Oeser 1, NEc SE 17-16s-11w, drilled to 3277 feet and was waiting on cement before making a test of Lansing lime. Standard tools were being rigged for the test, to be made at 3050 feet where the show was encountered.

One half-mile west of the Graber pool of McPherson County, Continental Oil Company's Meyer 1, NEc SE 19-21s-1w, was coring ahead below 3441 feet after reporting no show in the Hunton lime, chief producing formation for the pool itself. It had top of the Viola lime at 3437 feet.

North of the Orth oil and gas pool of Rice County, W. E. Witt et al's Rieff 1, NWc NE 22-18s-10w, may prove to be an extension well, reporting 2800 feet of oil in the hole, coming from 3277 feet in Siliceous lime. It was to be acidized with 1000 gallons after running tubing. Tanks were being erected for a production test. The Orth pool, opened in 1932, produces gas from Kansas City lime at around 2800 feet and oil from Siliceous lime at the 3200-foot level. Two dry holes define the pool to the northeast.

Mahannah Revived

Revived area for Cowley County is the Mahannah pool, in the extreme northeast corner of the county, opened about 1918. J. A. Green et al's Mahannah 3, NWc SW 6-30s-8e, drilled to 2825 feet in Mississippi lime and during a 16-hour pumping test, made 792 barrels of oil. It filled 2300 feet with oil when drilled in and was estimated as a 150-barrel a day well at the time. Acidization stepped up production.

A poor showing was reported for Cardinal Oil Company et al's Sittner 1, SWc 4-22s-12w, 1½ miles south of production in the Sittner pool of Stafford County. At 3696 feet, the well swabbed approximately seven barrels of fluid per hour, 50 percent of which was water. It was being deepened from 3696 to 3700 feet for further testing.

Plugging back was under way at Continental Oil Company's Huxman 6, NE NW NW 29-21s-1w, in the Graber pool of McPherson County, first well there to find commercial production in Wilcox sand. It was drilled to 3418 feet and found water, and was to plug back to 3413 feet in the sand where it swabbed 30 barrels of oil per hour.

Operators were drilling ahead to lower formations at W. G. Talbot & Harwood Oil Company's Downs Estate 2, C SE NW 32-28s-2e, one-quarter mile north of the discovery well, producing from Stalnaker sand. The new test

missed the sand entirely and was drilling ahead below 2580 feet. It found top of Kansas City lime at 2525 feet.

Cities Service Oil Company's Heggy 1, NEc SW 26-23s-11w, five miles north of production in the Zenith pool of Stafford County, was drilling below 3850 feet with 1000 feet of water in the hole.

One-quarter mile west of the Schroeder pool, opened two weeks ago in Ellsworth County, Cities Service Oil Company, Skelly Oil Company and others were digging cellar for Schroeder 1 "E," NEc 30-17s-9w. Schroeder-Community 1, C NL NW 29-17s-9w, was completed for a potential of 1321 barrels of oil, natural, from 3210 feet in Siliceous lime.

Shell Petroleum Corporation was preparing to swab at Batt 1 "B," SEc 2-16s-14w, west offset to the discovery producer in the Ehrlich extension, the Trapp pool, Barton County. The well filled 2900 feet with oil in 21½ hours from Siliceous lime at 3314 feet.

East edge well for the Ellsworth County portion of the Bloomer pool, Stanolind Oil & Gas Company's Stumps 1, SWc NW 30-17s-10w, drilled to 3287 feet in Siliceous lime and was completed for 1539 barrels of oil and 273 barrels of water. It was given an acid treatment.

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARBER COUNTY—		
Helmerich & Payne, C. Winters 1, nw nw sw 16-32s-10w	*	5125
BARTON COUNTY—		
Darby, Casey 1, se se nw 4-16s-12w	*	3400
Carter Oil, Kroutwurst 2, se se nw 10-17s-11w	881	3326
Carter, Stueder 1, se se se 10-17s-11w	1807	3335
Continental, Rathbun 1, ne ne se 9-17s-13w	*	3387
Thayer Drlg. Co., Soderstrat 1, se se nw 21-17s-13w	1065	3267
Stanolind, Dick 3, sw sw sw 2-20s-11w (pb 3298)	*	3304
A. Schartz 7, nw nw sw 2-20s-11w	197	3299
Wm. Panning 7, ne ne ne 10-20s-11w (pb 3304)	*	3314
BUTLER COUNTY—		
Carey, Maxwell 1, nw sw sw 31-24s-4e	*	950
ELLIS COUNTY—		
Cities Service, Hall "A" 2, se sw sw 14-11s-17w	2664	3388
Gilmac Oil, Richards 1, se sw nw 5-11s-18w	941	3373
Skelly Oil Co., Moran 2, ne se se 31-17s-10w	4309	3018
GRANT COUNTY—		
Panhandle Eastern, Ill. Bankers 1, center nw¼ 17-29s-37w (pb 2580)	¶6	2750
MARION COUNTY—		
Ryan & Herschill, Fike 1, ne ne ne 28-17s-4e (otd 350)	*	2466
McPHERSON COUNTY—		
Continental et al, C. C. Graber 7, se ne nw 32-21s-1w	569	3319
PRATT COUNTY—		
Ohio, Howell 1, c sw sw 21-29s-15w	*	4929
RENO COUNTY—		
Transwestern, Teten 2, sw sw ne 12-23s-4w	1651	3160
Wilcox, Neufeldt "A" 3, se se nw 12-23s-4w	676	3428
RICE COUNTY—		
Joe A. Aylward, Weike 1, sw sw ne 23-18s-9w	*	3367
Western Kansas, Bailey 1, sw sw nw 19-20s-6w	*	3875
RUSSELL COUNTY—		
Phillips, Carroll 5, ne ne se 18-14s-14w	1796	3084
Transwestern, H. Polcyn 11, nw nw se 10-14s-15w	610	3259
Carter, Detrich 2, se se sw sw 8-15s-13w (otd 2943)	2057	3180
Cities Service, Krug "D" 4, se sw se 24-15s-14w	1380	3332
Shell, Dumler 2, se se sw 36-15s-14w	959	3321
SEDGWICK COUNTY—		
Prunty Prod. Co., Lewis 1, se se ne 17-25s-1e	1394	3328
Reeves & Kinnar, Heim 1, sw sw sw 5-29s-3w	*	4330
STAFFORD COUNTY—		
Stanolind et al, Mason McComb 1, ne ne nw 26-24s-11w	572	3811
WOODSON COUNTY—		
Sheedy, Klick 10, sw sw se 20-25s-14e	20	1470
Corknew 2, nwc ne ne nw 29-25s-14e	15	1425

*Failures; †Junked; ¶Million cu. ft. gas.

Wichita.—Completions ran ahead of locations in Kansas last week, 31 against 24. The completion list included 19 oil wells with initial output of 23,563 barrels, 1 gas well, and 11 dry holes. By counties, the locations were staked as follows: Stafford 6; Barton, Cowley, Rice and Russell, 3 each; Barber, Greenwood, Pawnee, Pratt, Stevens and Woodson, 1 each.

Oklahoma locations off

Tulsa.—Locations dropped to 33 in Oklahoma last week while the list of completions stood at 50. In the completions were 30 oil wells with total initial output of 6708 barrels; 3 gas wells, and 17 dry holes. Seminole County drew 5 of the locations, and Osage County had 4, with 3 in Pontotoc County, and 2 each in Creek, Hughes, Noble and Oklahoma. The counties with 1 location each were Atoka, Beckham, Caddo, Carter, Cleveland, Garvin, Kiowa, Lincoln, Love, Okmulgee, Payne, Pottawatomie and Wagoner.

Ask 10-acre space

Oklahoma City. — Ten-acre spacing has been asked for the new Ramsey pool, Payne County, by the Mid-Continent Petroleum Corporation, which drilled the discovery well on the 640-acre community block. Its petition, which seeks to have the regulation applied to 8320 acres, will be heard by the Oklahoma Corporation Commission February 10.

The petition sets out that reservoir energy of the pool consists of gas drive, water drive, or a combination of the two. The casing program recommended is for a minimum of 900 feet of surface pipe, the size to be selected by the producer, that the oil string be set and cemented between 4700 and 4750 feet in the Viola lime, and that the size of this be 7-inch.

Sunray Dividend

Tulsa.—C. H. Wright, president of Sunray Oil Corporation, last week announced the board of directors had voted the regular quarterly dividend of 68 cents a share on the preferred shares, payable April 1 to stockholders of March 8. Common stock dividend was passed, Wright's announcement stated.

The company reported earnings of between 50 and 60 cents per share of the common stock for 1937 as against 27 cents for 1936. Underground reserves of the company at the end of the year were placed at approximately 24,000,000 barrels of oil, nearly double the figure at the end of 1936. The estimate was made by independent engineers.

A vacancy on the board of directors was filled by William G. Johnston, a member of Johnston & Johnston, Oklahoma City, independent operators.

Japanese active in aircraft lubricant research

When early in 1937 the Asahi plane "Kamikaze" made its record-breaking Tokyo-London flight, it was observed that the engine of the all-Japanese-made craft was kept running with imported lubricant.

Great activity has since featured lubricant research and production, and many of the navy planes now bombing Chinese cities are lubricated with Japanese oils, it is said.

Talk is running high of the invention of Dr. Yuzaburo Nagai, president of the Aeronautical Institute of Japan. Dr. Nagai is said to have succeeded in producing lubricant of high viscosity and stability from locally available fish oil. A viscosity of 100-130 is claimed for his product, as compared with 70 for castor oil, which has been widely used in Jananese aircraft, and 90-100 for Pennsylvania lubricant, while its stability is said to be quite as good as that of the best American product. Furthermore very favorable results were obtained in the Ramsbottom test for carbon residue, which is used in the standard specifications of the British air ministry, it is pointed out. Preparations are now afoot to industrialize this invention on a large scale.

While Japanese producers of liquid lubricants have a tendency to employ hydrogenation and other processes rather than the solvent system, it is now planned to establish a semi-governmental firm which is to produce high-grade lubricants by solvent methods exclusively. Ogura Petroleum Company, a private firm, has also completed researches in this direction and is planning a solvent refinery plant for lubricants.

Other scientific achievements are the non-freezing lubricant developed by Prof. Yoshinosuke Kobayashi, of Tokyo University of Engineering, and the re-activation process invented by Dr. Yozo Fukagawa, of the Institute for Physical and Chemical Research. In Prof. Kobayashi's invention, crude rubber is added to lubricant of low pour and setting point and treated by a hydrogenation process. The useful life of lubricating oils can be greatly extended, it is claimed, by the recovery process of Dr. Fukagawa. The main feature of the process is the use of acetone at a temperature of 30-50°C.

A new colloidal agent for lubricants has been discovered by the Daimaru Mineral Oil Research Institute of Daimaru Mineral Oil and Electric Machinery Company, Osaka. This solid lubricant is said to be the colloidal powder of a light metal, which remains suspended in oil indefinitely.

Two firms have emerged as producers of hydrogenated lubricant, Toyo Shoko Petroleum Company and Hayama Petroleum Company.

ILLINOIS DEVELOPMENTS

Deep projects under way in Effingham and Jasper.

* * *

Operations again delayed by bad roads following thaw.

Olney, Illinois.—Hollis et al's Haarmann 1, Section 32-8n-6e, Douglas Township, Effingham County, which reported an oil showing in the St. Louis lime but failed to indicate commercial production when the saturation was drilled through with cable tools, is to be deepened to 4200 feet. The test is now bottomed at 2790 feet, and will be deepened with a heavy cable tool outfit by Ferrell, Wilson and Knapp Drilling Company, of Tulsa.

Another deep test commanding attention is Hoffman and Byrd's King 1, Section 20-8n-10e, Crooked Creek Township, Jasper County, which was drilling below 4200 feet. It is to be drilled to 4500 feet in search for commercial production in the Trenton rock formation.

Sub freezing weather, which a week ago promised to make possible the start of many new tests in the basin area, was of short duration and by early last week roads and fields were again in a muddy condition that precluded movement of equipment in many sections. In the vicinity of the Irwin 1, Section 12-2n-7e, Stanford Township, Clay County, some road building is to be undertaken jointly by Pure Oil Company, Wiser Oil Company, Snowden-McSweeney and other operators to speed development in that area.

The Irwin wildcat after acid treatment a week ago was still flowing last week at the rate of 300 barrels a day. The Texas Company announced three offsets, and Burkan Drilling Company two offsets to the latter company's Allen 1, Section 26-4n-10e, Olney Township, Richland County, which confirmed that area two weeks ago. Allen 1 was acidized Wednesday night and Thursday noon indicated initial flush production between 900 and 1000 barrels daily. Initial before treatment was 357 barrels. In the same township, Papoose Oil Company's Edith Lynch 1, Section 5-3n-10e, took a core Thursday afternoon at 3091 feet, but found no McClosky saturation. The company was to continue to core in an effort to find production later last week.

Threatened with a drilling campaign not unlike that which took place this winter in Noble, where derricks tower close together over the village, the Olney City Commission Wednesday passed an ordinance limiting drilling within the city limits to one well in each city block. A special emergency clause makes the ordinance effective immediately. Included in its provisions are a $100 license fee for movement of a drilling rig into the city and a bond of $40,000 to be posted by the drilling company to indemnify the city against fire, accident or death because of drilling operations. Leases are to be taken by city blocks, about three acres, with property owners sharing in production royalties in proportion to their footage. No restrictions are placed by the city as to a drilling site on any block.

Southwest of Noble in Richland County, Max Pray's Harold Runyon 1, which was considered dry when the upper McClosky appeared too tight, picked up a new saturation at 3121 feet and was cased and cemented at that depth. The plug was drilled out Monday and operators were preparing to test production. If any oil shows during swabbing, the test will be allowed to flow or will be acidized failing to recover drill pipe lost in the hole. Benedum & Trees Oil Company was preparing to abandon its Owens 1, Section 23-4s-3e, Spring Green Township, Jefferson County.

Austin.—The Texas Railroad Commission has issued rules for operations in the Oilton field, Webb County. Wells must be spaced 220 feet from property lines or 440 feet apart, which is one well to five acres, approximately.

The commission requires 80 feet of surface casing cemented 50 feet above the shoe and an oil string set with 50 sacks of cement.

Wells must be equipped with a bradenhead, and the allowable is fixed on acreage plus potential, with 50 percent allocated on each factor. A maximum of 10 acres may be assigned to any well. The flowing potentials are taken for 24 hours through a ¼-inch positive choke 6 inches long, and pumping well potentials must be taken through tubing with a maximum diameter of 2½ inches.

ILLINOIS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLAY COUNTY—		
Pure, Leon Clark 3	45	3032
RICHLAND COUNTY—		
Johnson Dr. Co., Brant 1	585	2955
Johnson & Andrews, Hanna 1	335	2960
C. P. Miller, Golde 1	125	2954
Pure, Coen 4	40	3030
W. F. Lacey, Fruth 1	35	2965
DeKalb Oil Co., Daniels 1	*	2989
WAYNE COUNTY—		
Duncan Oil Co., Riggs 2	20	3088

*Failures; †Junked; ¶Million cu. ft. gas.

EASTERN FIELDS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
OHIO		
ASHLAND COUNTY—		
Mehowa O&G Co., Burnsides 1	¶.77	2960
ATHENS COUNTY—		
C. W. Nuzum, Kincaide 1	¶1.00	1498
J. V. Bowman, Edgeryon 3	*	975
Gibson & Ross, Copeland 2	*	1047
BELMONT COUNTY—		
Reese et al, J. Dutton 2	5	1885
Natural Gas Co. of W. Va., McFetridge 1	¶.12	721
Barnsville Dev. Co., Atrivnyak 1	*	1984
GUERNSEY COUNTY—		
Jewell O&G Co., Davidson 2	¶.30	1550
HOCKING COUNTY—		
Dowler O&G Corp., Watts 1	¶.04	2520
MEDINA COUNTY—		
Edson & Son, Ripley 39	8	470
Ripley 40	*	432
MEIGS COUNTY—		
McKnight et al, First 1	¶.10	870
MONROE COUNTY—		
Scott Oil Co., Scott Hrs 5	2	1300
Jims Run O&G Co., McCutchison 1	¶.68	1560
MUSKINGUM COUNTY—		
Atha Realty Co., Bailey 1	10	3155
NOBLE COUNTY—		
G. P. Wasmuth, Pfeiffer 1	¶	1500
STARK COUNTY—		
East Ohio Gas Co., Miller	¶2.50	4350
TUSCARAWAS COUNTY—		
Brendal Prod. Co., Robinson Clay Products	¶11.00	4720
WASHINGTON COUNTY—		
Henning & Hall, McKee 4	¶15	1185
Swigle et al, Murdock 7	*	593
WEST VIRGINIA		
BOONE COUNTY—		
Pure, Federal 78	¶1.11	3145
BRAXTON COUNTY—		
Pittsburgh & W. Va. Gas Co., Parkersburg Mills 7630	¶.09	2035
E. F. Martin 7640	¶.04	2689
CABEL COUNTY—		
Lusher et al, Adkins 1	¶.10	3425
GILMER COUNTY—		
G. W. Roberts, Rhodes 1	¶.03	2818
KANAWHA COUNTY—		
West Va. Gas Corp., Vandine et al	¶16.16	4903
Lima Gas Co., Thaxton 1	¶12.72	5038
R. E. McCabe, Ray 1	¶5.00	4883
United F G Co., Whittington 4763	¶4.99	5100
LINCOLN COUNTY—		
Blue Ridge Gas Co., Adkins	¶.18	3358
MINGO COUNTY—		
Burchett, Hale et al, Akers 1	¶23.00	2950
RITCHIE COUNTY—		
W. R. Hays, Wilson 2	¶.18	2000
WAYNE COUNTY—		
Bazil Burgess Oil Co., Lester	¶.92	1450
Mountaineer Gas Co., Adkins 2	¶.22	3344
WOOD COUNTY—		
Wamsley Oil Co., Stagg 1	1	1780
KENTUCKY		
BRECKENRIDGE COUNTY—		
Kentucky Nat. Gas Co., Jones 1	*	617
FLOYD COUNTY—		
Kentucky-W Va. Gas Co., Dillon 556	¶2.02	1331
GRAYSON COUNTY—		
Smith et al, Green 7	*	300
HANCOCK COUNTY—		
J. C. Ellis, Smith 9	20	390
Grovely O&G Co., Baker 8	*	601
LEE COUNTY—		
T. Witmer, Tipton 7	5	473
H. C. Wiggins, Smith 1	*	940
McLEAN COUNTY—		
South Penn Oil Co., Nall	65	1440
Ellis & Huff, York 1	*	1136
OHIO COUNTY—		
A. Teller et al, Whitehouse 11	20	740
Snowden & McSweeney, Peckinpaugh 21	¶	....
WEBSTER COUNTY—		
Garrison & Powell, Edwards 1	¶.13	815
PENNSYLVANIA		
GREENE COUNTY—		
Manufacturers L&H Co., Ross 3557	¶.48	3270
Union G&O Corp., Galentine	1	3595
WASHINGTON COUNTY—		
McGuigan O&G Co., McCarroll 1	¶.02	2450
Parkinson et al, Phillips 1	*	2882
NEW YORK		
STEUBEN COUNTY—		
Sylvania Corp., Husted 1	¶10.00	4200

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS FIELDS

New completion method overcomes Seminole gas.

* * *

Wasson gets one of its largest producers.

* * *

Search for Ordovician in Permian Basin growing.

Midland, Texas.—Introduction of the socalled Gulf Coast method of completing wells in the north portion of the Permian basin proved successful last midweek when Amerada Petroleum Corporation's T. S. Riley 1, C SE SE W.T. Ry. Section 229, Block G, north offset to the Seminole pool, Gaines County, discovery producer, kicked off with natural flow. This fifth producer for the pool excluded the troublesome gas found in the upper section of the oil saturated lime by previous completions. The hole was carried to 5047 feet, or 1714 feet sub sea. Electrical formation surveying instrument was run prior to cementing 5½-inch casing on bottom. Cement was drilled out to 5045 feet, and casing gun-perforated with 80 shots at 5027-45 feet. Tubing was landed at the latter depth, with perforations below packer at 5019 feet. The well was swabbed in February 3, and made 2 barrels fluid hourly, including 20 percent drilling fluid and 4 percent b.s., while cleaning itself.

Amerada Petroleum Corporation's Robertson 1, C SW SW Section 196, mile east of production on Seminole structure, is adhering to the orthodox completion method through having missed the upper gas and checked low on structure. It was drilled to 5112 feet, or 1768 feet sub sea, and showed trace oil with rotary mud when formation tester was set at 5068 feet. Five-inch pipe has been cemented at 5000 feet. Standard tools will be used to drill plugs and test.

Large Wasson Well

Yoakum County section of the Wasson field contributed one of its largest producers when Denver Producing and Refining Company's Whittenburg Est. 3, C NE SE Section 863, Block D, flowed 40 barrels 35 gravity oil per hour, with gas volume rated at 12,000,000 feet daily. It was drilled to 5028 feet, and acidized twice with a total of 7000 gallons of solution. Gas/oil ratio of this well is one of the highest in the northwest sector of the large field. The Texas Company's Willard 1, C SW SW Section 799, offsetting production, logged first free oil at 5000 feet, with an elevation of 3614 feet, and was carrying 4000 feet of oil while drilling with cable tools at 5035 feet. Rotary was used to 7-inch casing point at 4750 feet.

Trio of outposts drilling on short term leases situated on a line between the Bohago one-well pool and the Bennett field, Yoakum County, were nearing a decisive level late last week. Bohago Oil Corporation and Bond Oil Corporation's J. L. West 1, SEc Section 607, 1½ miles southeast of their discovery, reported no oil or gas showings in drilling to 5165 feet, or 1501 feet, checking about 85 feet low. Gulf Oil Corporation's Dixon 1, SW SE SE Section 609, was drilling at 4690 feet, with an elevation of 3638 feet. Ohio Oil Company's Claywater 1, C NW NW Section 638, was drilling at 4920 feet, with an elevation of 3659 feet.

Initial flow of 1920 barrels of 35.6 gravity oil and 1,500,000 feet of gas was recorded on potential test by Gulf Oil Corporation's Henderson 11, SE NE NW PSL Section 4, Block 23, Crane County, which previously indicated that it would link the Jordan and Waddell areas. It is ¾ mile southeast of nearest production in the former and 1¼ miles northwest of the Waddell area. Gauge was taken through open casing and tubing after using 5000 gallons of acid in lime at 3527-45 feet. It has an elevation of 2783 feet. Rig has been skidded southeast to drill Henderson 12, NE NE SE Section 4. Gulf Oil Corporation is assured of more than 50 proved locations on its Henderson and Waddell leases as result of the merging of the two areas, which are likewise a continuation of the Judkins field, Ector County, although for proration purposes the Commission has elected to classify the Jordan as a separate unit.

Ordovician Play Grows

Search for Ordovician production in the lower basin area is being expanded although developments the past week at 3 deep tests were not encouraging. Distinct setback for Pecos County's prospective deep producer occurred when Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's McKee 1-a, near Imperial, swabbed dry after landing 254 feet of 7-inch line on bottom at 5294 feet. Prior to setting liner this wildcat flowed several heads of 43 gravity oil, indicating that the area is the best bet for Ordovician production among the various prospects. Rotary is to be replaced with standard rig unit to deepen. Top of Simpson was logged at 4775 feet, with an elevation of 2385 feet.

String of 5½-inch pipe has been cemented at 5028 feet for a production test of Stanley Thompson et al's Elsinore 1, southwestern Pecos County wildcat, after logging oil and gas shows in drilling to 7128 feet. Operations were temporarily halted last week on Floyd C. Dodson et al's Texas American Syndicate 1-a, northern Brewster County, at 7062 feet, or 329 feet

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in the Simpson series. Abandonment of Moore Bros. Corporation et al's Perner 1, western Crockett County Ordovician project, is under consideration, according to reports, after progressing to 9086 feet without encouragement.

Southeast portion of the basin is slated to receive a number of deep tests, and currently interest is centered upon the performance of a Schleicher County prospect. Tex-Tor Oil Corporation's Judkins-Spencer 1, C SW of A&B Section 33, Block A, 10½ miles northeast of the county's single producer, entered Simpson, or middle Ordovician, at 5547 feet, or 3309 feet sub sea, and was drilling at 5780 feet. No shows were recorded.

Ordovician test for the Russell dome, Runnels County, which yielded a short lived oil producer nearly a score of years ago, will be started shortly by Frank G. Beaudoin and Rex Cannon, Dallas, on the Herman Giesecke land. Contract calls for a 5000-foot test. The Russell area embraces unusual geological features. Supported by a 6000-acre lease block, Barnett Oil Developments, Inc.'s had rigged up to drill Sims 1, Carl Thiele Survey No. 58, Concho County, about 3 miles northwest of Paint Rock, to 4000 feet in search of Ordovician production.

East Texas salt water disposal plan

Plans to dispose of East Texas salt water production by reurning it to the Paluxy formation were revealed this week in an order by the Texas Railroad Commission.

Humble Oil & Refining Company obtained authority to drill its W. W. Holland 37 to the Paluxy sand, and to attempt salt water injection. The lease is located in the Thomas Allen Survey in Upshur County.

The commission's order provides that "7⅝-inch O.D. 26-pound casing is to be cemented with 200 sacks of cement at about 3900 feet. The top of the Paluxy is expected to be found at 4950 feet to 5050 feet, and a thickness of 350 feet is expected. Set 5300 feet of 5½-inch O.D. 20-pound casing at about 5300 feet with 300 sacks of cement. Then core the Paluxy section and run tester on said section. If the core recovery in the Paluxy section is not satisfactory, then run electric core. The well is to be completed by perforating with a Lane-Wells gun perforator if the cores show unconsolidated shale streaks in the Paluxy. If the section is consolidated without shale streaks, it may be possible to leave the formation open or set a liner. After the well is completed, attempt to inject water by force of gravity. However, if this does not furnish sufficient pressure, pumps are to be set to determine at what pressures and volumes the Paluxy formation will take water. If this well is unsuccessful as an injection well, pull 5½-inch and plug back to Woodbine section, perforate 7⅝-inch casing and produce as a Woodbine well . . . "

Austin.—The Texas Railroad Commission has scheduled a hearing for February 9 at Austin to consider operating rules for wells drilled in the McFadden field, Victoria County. On February 10 the commission will hold a hearing on the Withers field, Wharton County, to consider similar rules for that field.

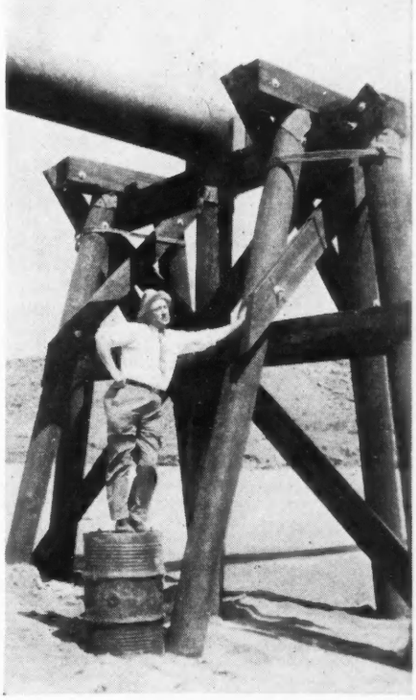
Comanche Duster area yields flowing well

Abilene, Texas.—The Duster area, Comanche County, avoided by wildcatters when the county was an active drilling center nearly a score of years ago due to the development of the Desdemona and Sipe Springs areas, has betrayed its name by yielding a flowing oil producer from the Marble Falls lime series.

W. J. Dobbs et al's V. B. Hodges 1, NEc of H&TC Section 11, Block 2, about 1 mile southwest of the town of Duster, flowed 200 barrels of 42 gravity oil in 6 hours after using 4000 gallons of acid in lime at 2701-10 feet. Initial gauge was taken January 26. Due to limited tankage the well remained shut in until February 1 when it flowed 50 barrels in 1-1/3 hours. It is rated at 500 barrels daily. Top of Marble Falls was logged at 2525 feet, with an elevation of 1402 feet. The hole was plugged back 2 feet from 2712 feet because of small amount of salt water, which later proved to be from lime cut casing. Dobbs et al originally held a 3000-acre block and sold all but 640 acres.

Drilling of the Duster discovery was based on oil showings made by F. Kirk et al's R. T. Haile-Kirk 1, near west line of Section 210, John Talbot Survey, A-941, about 2 miles west by north. The latter was junked in 1931 following nitro shot in Marble Falls. Use of acid for stimulating production from this horizon was not practiced at that time.

Completion of a second oil producer in the Ellenberger lime area uncovered last year in northwest Eastland County, about 8 miles northwest of Cisco, was underway last week. Lone Star Gas Company's Cozart 1, originally completed in 1931 as a small gasser at 3817 feet, deepened to Ellenberger at 3946-71 feet, and swabbed 35 barrels oil in 6 hours after using 1000 gallons of acid. It is northwest of Hickock Dev. & Production Company's Van Parmer 1,



J. W. Longstreth, Independent Gas Engineer of the Texas Panhandle area. When caught by the photographer, he was making a quick test of the strength of a pier supporting a 24-inch gas transmission line across the North Canadian River.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
COCHRAN COUNTY (Duggan)—		
Fogelson & Ingleright, Tarver- Houston 2	611	5073
CRANE COUNTY (Jordan)—		
Sinclair Prairie, University 2, lse 23	150	3599
University 2, lse 24	115	3612
CRANE COUNTY (Sand Hills)—		
Gulf, McKnight 3	*	6278
ECTOR COUNTY (Foster)—		
Barnsdall, Johnson 4	538	4285
ECTOR COUNTY (Goldsmith)—		
Amerada, Cummins 5	616	4276
Gulf, Goldsmith 63	1880	4250
Goldsmith 65	736	4220
Goldsmith 66	608	4275
Humble, Scharbauer 6-B	1700	4250
Landreth Prod. Corp., C. Scharbauer 3-L	1213	4200
ECTOR COUNTY (Harper)—		
Broderick & Calvert, Cowden 5-C	1381	4280
Oil Well Drl. Co., Cowden 1-A	499	4287
Cowden 2-A	1383	4241
ECTOR COUNTY (Jordan)—		
Fogelson et al, University 3-A	535	3560
University 7-B	675	3642
ECTOR COUNTY (Judkins)—		
Donnelly et al, Connell-Shell 1	471	3667
Worsham et al, Connell 1	633	3650
ECTOR COUNTY (North Cowden)—		
Owenwood Pool No. 3, Mrs. A. W. Wight 2	476	4229
Sun, Wight 2-C	230	4173
FISHER COUNTY (Wildcat)—		
L. A. Daniel & J. B. Rhoads, Nickless 1-A	*	3340
HOWARD COUNTY—		
Humble, Douthitt 5	1110	3005
Jamison-Pollard & Foster, Chalk 1-B	924	2940
Pure, Chalk 16	547	3158
Sun, Snyder 1	110	2885
JONES COUNTY—		
Condor Pet. Co., Logsdon 2	*	2458
Clayton Holt 6	10	1914
Feltmont Oil Corp., Woodson 1, sec 200	*	3402
Bert Fields & Smith, Carter 1	300	1890
Gwynn & Overby, Baker 1	*	2310
Herring et al, Dodge 1	*	2455
Humble, Hollums 2	3000	3224
Petroleum Prod Co., Milsap 2	650	1957
Riddle, Tr., Freeman 1	*	2645
Lewis Prod. Co., Sayles 10	277	1992
Shaheen Oil Co.-H. T. Owen, Jensen 1	*	3503
Trippett et al, Guitar 14	110	2014
Ungren & Frazier, Dorsey 13	43	2178
LOVING COUNTY (Mason)—		
Michigan O&G Co., Kyle 6	227	2971
LOVING COUNTY (Wheat)—		
Standard (Tex.), Reagan-McIlvain 9	106	4275
LOVING COUNTY (Wildcat)—		
Barnett Pet. Corp., Johnson 1-A	*	3967
RUNNELS COUNTY (Wildcat)—		
H. C. Hantho & S. Nelson (was K. Z. Oil Corp.), Fletcher 1	*	4381
UPTON COUNTY (Gulf-McElroy)—		
Gulf, McElroy 167	483	3020
UPTON COUNTY (McCamey)—		
Blaine Oil Co., Powell 3	654	2504
Humble, Ricker 8-B	393	2411
Ricker 10-B	37	2300
Alf Reese, Jr. et al, Burleson 4	879	2395
WARD COUNTY—		
Gulf, Hutchings 95	996	2768
E. W. Estes 68	132	2690
E. W. Estes 76	287	2686
Richardson Oils, Inc., Johnson-Sun 32-B	67	3685
Sidwell & Myers, Cannon-Stanolind 5	100	2369
Standard (Tex.), Adams 10	252	2950
Sun-Atlantic, Johnson 5	375	2557
T.P. C&O Co., James 23	233	2510
WINKLER COUNTY (Hendrick)—		
Stanolind-Westbrook-Thompson Hold. Corp., Hendrick 4-T-Q-88	373	3096
WINKLER COUNTY (Kermit)—		
Atlantic-J. D. Collett, Hendrick 2-L	218	3085
Humble, Colby 27-C	602	3070
Magnolia, Walton 122	1349	2936
Walton 126	725	2946
Walton 127	1436	2955
WINKLER COUNTY (Keystone)—		
A. G. Carter et al, Walton-Pure 19-a	589	3385

*Failures; †Junked; ¶Million cu. ft. gas.

which flowed 1041 barrels natural at 4018-25 feet. The latter's W. J. Donovan 1, C NE NE S. P. Ry. Section 489, 2-1/3 miles southeast of the deep discovery, logged top of Barnett shale at 4139 feet, and had not reached the Ellenberger in drilling to 4190 feet.

Exploration of the lower Ellenberger for the first time in the virtually depleted Desdemona field has been delayed temporarily. Gallagher & Lawson's B. I. Terry 1, half mile south of the town, encountered sand break in lime at 4724-25 feet while carrying hole full of sulphur water, and will run 7-inch pipe. Top of Ellenberger was logged at 3404 feet, with an elevation of 1334 feet. This test is contracted to drill to 5500 feet, and will likely drill through the Ordovician member in reaching its goal.

Efforts to extend production in the Avoca field, northeast Jones County Canyon lime area, some distance beyond the discovery block has exacted a toll of 9 failures, all within a radius of 3 miles of the 11 flowing oil wells. A surprise failure was recorded last week when Bells Wells Oil Company's R. L. Pond 1, SWc NE of BBB&C Section 165, one mile east of the northernmost producers, encountered mostly shale in the Canyon and was abandoned at 3504 feet, with an elevation of 1528 feet. It was about 20 feet lower structurally than the discovery. Production extends in a north to south direction for 1¼ miles, and is proved for a width of 3 locations. Nearest dry hole is half mile southeast of production. Avoca is considered one of the most productive pools in the county, based upon thickness of pay present in the 9 wells completed by Iron Mountain Oil Company and Humble Oil & Refining Company, discoverers, and one well each for Maracaibo Oil Exploration Corporation-W. L. Pickens and Fain-McGaha Oil Corporation-Sinclair Prairie Oil Company.

WEST CENTRAL TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BROWN COUNTY—		
S. B. Roberts Co. et al, Angel 1	¶1.4	2767
Ungren-Frazier & P. Pitzer, Cox-McInnin 1	*	2677
CALLAHAN COUNTY—		
S. B. Owens et al, Shanks 1	*	1987
H. A. Stebinger et al, Kennard 1	†	1608
COLEMAN COUNTY—		
Goldston et al, Archer 1	*	1610
McDonald-Campbell & Cunningham, Lowe 1	*	1436
EASTLAND COUNTY—		
Deaner et al, Higgins 2	*	1781
ERATH COUNTY—		
Arnold Oil Co., McMillan 1	*	3207
Hickey et al, Smith 1	*	3250
PALO PINTO COUNTY—		
Brazos River Gas Co., McAvoy 3	†	1812
Gordon et al, Johnson 1	¶4.4	3595
SHACKELFORD COUNTY—		
G. Bailey, Tr., Diller 2	6	521
Diller 3	8	532
Baker & Pardue, M. Davis 1	*	1769
Charter O&G Co.-Snowden-McSweeney Co., Dawson 1, sec 174	*	1544
R. L. Crawford et al, Davis 1	*	1929
Owens-James & Jones, Morris-Buie 10	*	1607
Owens-Snebold Oil Corp. et al, Haterius 1, sec 163	1100	3218
Roeser-Pendleton, Dawson 46, sec 202	147	1628

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS FIELDS

K-M-A has more wells drilling than East Texas field.

* * *

Extending production more than three miles northwest.

Wichita Falls.—The K-M-A field has dethroned the giant East Texas field as the most active drilling center and will retain the lead indefinitely. The former entered the new month with 80 rotary and cable tool units in active service, while the East Texas field is credited with 77 active rigs. Total operations in the K-M-A area accumulate rapidly with the aid of a normal quota of new locations each week because of elapsed time for a completion ranges from 3 to 5 weeks.

Completions in the Strawn horizon at K-M-A have increased to 112. Current report on field activity reveals 42 tests in process of completion and those with the oil string cemented. Majority of these have replaced rotary with machine to drill plugs and complete. Ten tests are classified as having surface pipe set, and 38 were drilling with rotary above the big lime. Derricks were up on 15 well sites, and 40 additional locations were listed. Increasing number of operators are using rotary to drill the oil zone, instead of cementing pipe above and shifting to cable tool machines. Half dozen tests in the more prolific sections of the field have successfully used the rotary, although this method is hazardous on outposts and edge locations. Operators expect to cut drilling costs and obtain larger initial yields by cutting the pay zone with larger diameter rotary hole, then swing pipe and cement. Machines, which are generaly engaged on a day-rental basis, will be used to drill out cement plugs and condition the hole.

Plenty of Rigs

Competition for work among rotary contractors is evident due to the large number that have shipped rigs in from distant points. Reports of price cutting by new entrants have been prevalent, but operators are not taking advantage of these isolated cases to force the prevailing price below $12,000. This flat price calls for the contractor to drill to the pay and cement pipe, supplying derrick, fuel, water and all labor. Promiscuous price cutting would force the more efficient and reliable contractors to withdraw their rigs.

Extension of production 3¼ miles northwest to the south portion of the Electra arch was pending late last week. This important development centered upon Rathke Oil Company et al's T. L. Burnett-Gulf 1-A, near C NW NE HT&B Section 4, A-572, which was carrying 700 feet of oil in the hole while drilling gray lime at 3670 feet. Top of lime marker was logged at 3420 feet, with an elevation of 1137 feet. First saturation appeared at 3552 feet, with free oil appearing at 3584-3610 feet. It is ¼-mile north of Gulf Oil Corporation's Burnett 43, which showed free oil in drilling through the Strawn with cable tools to Ellenberger at 3715-4295 feet, with an elevation of 1124 feet. The latter filled 900 feet with oil in 12 hours after plugging back for nitro shot at 3598-3650 feet, and was abandoned as a deep prospect in July, 1929. First

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLAY COUNTY—		
Bridwell Oil Co., Edrington 9-A, sec 24	97	1125
Metzner et al, J. J. Taylor 4	20	1124
J. J. Taylor 7	103	1124
COOKE COUNTY—		
Byars & Nenny, Scroggins 1	*	3040
Gill & Witherspoon, O. Wilson 2	¶1 & 15	1032
Kerlyn Oil Co., C. B. Blagg, Jr. 4	38	2034
Geo. L. Pace Pet. Co., Winstead 3-B	150	1190
JACK COUNTY—		
Brazos River Gas Co., Box 5	¶4½	2877
Danciger Oil & Refineries, S. M. Ivey-Dowman 1	513	3149
W. R. Deering & Son, Owens 1	172	3177
Hanlon & Buchanan, Rhodes 5	22	2295
Nelson Oil Synd., Eatherly 2	350	2808
Perrin et al, Rhodes 2	636	3099
MONTAGUE COUNTY—		
Arco Oil Co., Salmon 17-E	70	1636
Salmon 18-E	12	981
WICHITA COUNTY (K-M-A)—		
Bonner Co.-Harvey, Munger 2, blk 31	607	3857
Consolidated Oil Co.-Joe Howell, W. P. Ferguson 2, lot 5	2160	3857
Deep Oil Dev. Co., Munger 15, lot 21	2000	3665
Geier Bros., Inc., & F. B. Jackson, Jr., C. F. Ancell 1	*	3990
H. A. Schaeffer Oil Co., First Nat'l Co. 1, lot 8	933	3838
Siebold & R. O. Harvey, Munger 1, blk 24	†	2361
Wallace et al, Lewis 1, blk 20	438	3767
Wynne, Tr., Waggoner Bros. 1, lot 36	525	3918
WICHITA COUNTY—		
H. G. Mitchell et al, Fassett-Tuttle 3	*	915
Perkins-Cullum, Burnett 11-A, sec 2	*	1934
Pois & Schultz, Foster 4-J, sec 2	175	1248
Tide Water Associated, Chilson 11, blk 3	4	640
WILBARGER COUNTY—		
Lido Oil Co., Waggoner Est. 19-C, sec 51	55	2711
Geo. M. Shaner et al, Waggoner Est. 1-B, sec 42	31	2549
YOUNG COUNTY—		
Alexander & Beavers, Hamilton 6-A, sec 3401	*	920
Buttram Pet. Co., Shepard 1, sec 2703	*	4378
R. T. Parkin et al, Young Co. Lumber Co. 1	*	610

*Failures; †Junked; ¶Million cu. ft. gas.

commercial production from the K-M-A deep zone did not materialize until 2 years later.

Water table for the Archer County portion of the K-M-A area was established at a higher level than indicated by previously drilled dry holes to the east and southwest. H. A. Schaeffer Oil Company's Ferguson 1-A, NWc Block 15 and east offset to the first deep producer in the area, drilled into salt water at 3891 feet, or 2845 feet subsea. It flowed a few heads of oil while drilling saturated zone topped at 3846 feet. Hole filled with oil and one head occurred in 12 hours after shooting with 130 quarts at Plugged-back depth of 3886 feet. Top of lime marker was called at 3733 feet.

Structurally low position of Geier Brothers, Inc. and F. B. Jackson's Ancell 1, 3½ miles southwest of the most westerly producer, was borne out when the test filled 1000 feet with salt water in 4 hours after drilling plugs from 7-inch pipe at 3961 feet. Hole was carried to 3990 feet, or 2939 feet sub-sea, early in January, and lease titles delayed the production test. Top of big lime was logged at 3837 feet, being 160 feet lower structurally than nearest production.

Kilgore, Texas.—Sale by public auction of 483,278 barrels of confiscated crude and refined products now stored in Rusk and Gregg Counties has been postponed indefinitely by the state, according to T. D. Rowell, assistant attorney general. The above products, derived from illegally-produced oil in East Texas, were slated to be sold to the highest bidder on district court order by the sheriffs of the two counties on January 31 and February 1. Rowell announced that new auction dates will be made public 10 days prior to sales. Postponement of the sales until refined oil markets improve will enable the state to realize more cash from the illicit products, and will prevent further sag in the currently depressed gasoline market.

TEXAS PANHANDLE AREA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Magnolia, fee (244) 33	248	3160
Sinclair Prairie, Cooper 10	494	3104
Southwest Prod. Co., L. C. McConnell 1	¶68.7	2700
COLLINGSWORTH COUNTY—		
E. Wischkamper & Knoll, fee 1	*	2880
DALLAM COUNTY—		
Lone Star State Drl. Co., D. Crawford 1	*	4005
GRAY COUNTY—		
Cambrian Oil Co., Barrett 7	682	3246
Magnolia, Haggard 8	118	3316
Watchorn O&G Co., Saunders 2	476	2963
HUTCHINSON COUNTY—		
Crane & Rankin, Barnhill 1	†	2708
Gulf-Panhandle Ref. Co., Dial 77	470	3053
Holmes et al, Quinn 9	668	3105
Phillips, Cockrell 29	315	3043
Cockrell 30	377	3056
Stansylvania O&G Co., Wisdom 2	601	3098
Travelers Oil Co., Haile 6-A	844	3087
Turman Oil Co.-Plains Pet. Co., Whittenburg 16-A	728	2902

*Failures; †Junked; ¶Million cu. ft. gas.

EAST TEXAS

Talco and Sulphur Bluff have high percentage of water.

* * *

Cooperative fund being raised for new Talco deep test.

Talco, Texas.—Volume of water produced with oil from the Paluxy zone in the Talco field averages 10,671 barrels daily, according to January survey conducted by engineers of the Texas Railroad Commission. The report credits the field with 609 wells, all pumping and prorated to 46 barrels of oil daily, and 313 wells are yielding salt water, or an average of 34 barrels of water daily per well. Survey made last September when the field's 512 wells were prorated to 63 barrels oil daily estimated the volume of water at 10,030 barrels daily from 275 pumping wells, or an average of 36 barrels water per well. The reduced oil allowable did not materially lower the average water yield per well.

Sulphur Bluff field, Hopkins County, which also produces from the Paluxy, has fared better on water encroachment, with only 342 barrels daily while producing 4810 barrels of oil daily, according to January survey by the commission. This field has 73 oil wells, and water is produced by 19 pumping and 8 flowing wells. Comparatively few proven locations remain undrilled, and no operations have been authorized since a test to the lower Trinity found salt water present in the deeper zones.

Negotiations are still pending for the drilling of a second lower Trinity test at Talco. Independents and civic organizations are subscribing to a fund to defray the cost of deepening Ajo Oil Corporation's Sanders 1, C. Payne Survey,

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Fischer et al, Wilson 7-A (3½-ac)	7000	3761
Wilson 8-A (3½-ac)	7000	3765
Gen'l Am. Oil Co., Thompson 10 (7-ac)	7200	3750
Gulf, Perry 5 (296.22-ac)	300	3629
Humble, Kangerga 68-A (333¼-ac)	4500	3670
Silvey 8-C (58.02-ac)	8000	3729
Marko O&G Co., Lacy 8 (90.36-ac)	250	3687
Marr Drl. Co., Gossett 7 (33.8-ac)	†	3450
Moss & Urschel, Deason 7 (15-ac)	2000	3700
Griffin 6 (20-ac)	750	3747
Pine Pet. Co., Giles 9-a (30.44-ac)	4000	3696
Regent Oil Co., Harmon 10-B (3.61-ac)	7600	3766
Rubin et al, Keeling 2-A (15-ac)	4600	3732
Smith et al, Frederick 6 (10.19-ac)	144	3690
Ward Oil Corp., Thrash 41 (200-ac)	2500	3832
Weaver-Perry Oil Co., Wright 11 (12-ac)	4200	3687
J. N. Williams et al, Wylie 5 (10-ac)	3000	3670
KILGORE AREA—		
Black & Stroube, Jernigan 6 (31-ac)	7200	3765
Galvez Oil Corp., Alexander 7 (45.3-ac)	*	3520
Gulf, Nichols 10 (52.87-ac)	2400	3693
Still 27 (166.36-ac)	2500	3615
Houston Oil Co., Laird 11 (70½-ac)	8400	3667
Magnolia, Goyne 4 (25-ac)	9500	3620
Miller et al, Crim 4-A (1.93-ac)	1700	3576
Stanolind-Noble Drl. Co., Beall 11 (80.28-ac)	1500	3663
Sun-Seaboard, Pentecost 18 (131½-ac)	8800	3666
Tide Water Associated, Christian 18 (117-ac)	9500	3738
Trapp et al, King 4 (2¾-ac)	3600	3593
Wells & Gann Drl. Co., Charles 2-B (2-ac)	4000	3646
LONGVIEW AREA—		
Fidelity O&R Co., Akin 2 (4½-ac)	8800	3530
Gen'l Am. Oil Co.'s S. Adams 22 (102.65-ac)	9000	3586
McGrede 24 (109-ac)	†	3538
Humble, Edwards 39 (271.6-ac)	5000	3668
Mackey 29 (214.9-ac)	3000	3638
Mackey 30 (214.9-ac)	3600	3559
Magnolia, Free 32 (169.3-ac)	5400	3655
Goolsby 10 (73¾-ac)	10,000	3574
Jones 11 (65-ac)	8800	3614
Midfield Oil Co., Rodden 8 (30.38-ac)	2500	3579
Shell, Hampton 25 (169-ac)	8400	3678
Showers & Moncrief, Christian 3 (4.33-ac)	9000	3612
Sinclair Prairie, York 20 (86.45-ac)	3000	3568
Stanolind-Tide Water, Fonville 14 (100-ac)	8500	3562
Texas Co., Williams 4 (93-ac)	1500	3694
Turner et al, Jones 12 (63.84-ac)	9000	3648
ANDERSON COUNTY (Long Lake)—		
Hunt Oil Co., Brantley 1 (20-ac)	300	5304
Stanolind, Woodhouse 1 (38-ac)	¶65	5268
Tide Water Associated - Seaboard, Shaw-Cern 7 (1216-ac)	1200	5334
FRANKLIN COUNTY (Talco)—		
Humble, Coney 1 (5.36-ac)	475	4289
HOPKINS COUNTY (Sulphur Bluff)—		
W. L. Goldston-Normandie Oil Corp., Smith 10 (450-ac)	800	6600
TITUS COUNTY (Talco)—		
Humble, Belcher 3 (166.37-ac)	210	4356
Groves 4 (82.9-ac)	400	4326
Magnolia, Crawford 13 (80-ac)	*	4350
BOWIE COUNTY—		
Ferguson & Hill, Breckenridge 1 (412-ac)	*	2950
FREESTONE COUNTY—		
Rossiter et al, Fulton 1 (441-ac)	*	956
LIMESTONE COUNTY—		
Pure, Kendrick 16-T (96-ac)	*	8847
MARION COUNTY (Rodessa)—		
Gulf, Beard 1, R. Bennington sur.	600	6038
Fohs Oil Co., Henderson 1, U. Ewing sur	386	6048
Shell, Henderson A-1, R. Bennington sur	682	6041
Cook 2, R. Bennington sur	480	6087
HARRISON COUNTY (Wildcat)—		
Eastern Shrevetex Oil Co., George 1, J. S. Powell sur	8	2505

*Failures; †Junked; ¶Million cu. ft. gas.

Franklin County, from 4374 to 6000 feet. Sanders 1 is on a 4-acre lease originally held by W. O. Chenault et al, and is north of the fault, having logged top of Georgetown at 4012 feet, with an elevation of 365 feet. Deeper production at Talco is possible, as Magnolia Petroleum Company's J. A. Chapman 2, located on the extreme east end of the fault closure, developed free oil when formation tester was used on lower Glen Rose at 5588-5608 feet. It was deepened to water at 5643-61 feet, then plugged back and acidized with negative results.

Magnolia Petroleum Company's W. H. Crawford 13, located in southwest portion of 80-acre lease adjoining Talco townsite on the south, was listed as a failure after drilling to the water table at 4350 feet. The hole tested dry at 4320 feet, and electrical formation surveying instrument recorded only 4 feet of sand in the Paluxy section.

SOUTHWEST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic, Guaranty 2-B (McCampbell)	550	7243
Scrivner 3 (McCampbell)	620	7222
Danrey, Hays 2-A (McCampbell)	150	7170
North Star, Conn & Brown 1 (McCampbell)	440	7250
BEE COUNTY—		
McBride, Plummer A-2 (Plummer)	†	2470
HIDALGO COUNTY—		
Fair, Pena 1-B (Samfordyce)	950	2985
LIVE OAK COUNTY—		
Southwest, Hill 6 (Ezzell)	250	1540
NUECES COUNTY—		
Humble & Barnsdall, Webb 16 (Flour Bluff)	550	6667
Richardson, Chapman 1, sec 43	†	6811
Seaboard, Luby 4 (Luby)	350	5073
Smith, Walton 1 (Saxet)	†	4143
Southern Minerals, King 4 (Bentonville-King) (perfs 4023-26½ ft)	81	4266
Stanolind, Kampfhenkel 1 (Clara Driscoll) (perf 5325-40)	124	5502
REFUGIO COUNTY—		
Quintana, F.V.W. Heard 13 (Tomoconnor)	1300	5961
O'Connor 61-A (Tomoconnor)	2500	5942
VICTORIA COUNTY—		
Gulf, Traylor 2 (Heyser)	750	6038
Sun, Coffey 5 (Heyser)	450	5749
SAN ANTONIO DISTRICT		
Hantho-Nelson, Branyon 6 (Branyon)	*	2309
Martell, Young 5-E (Branyon)	50	2337
Millican, Norman & Reed, S. Lampkin 3 (Luling)	145	2106
FRIO COUNTY—		
Amerada, Melms 1 (Pearsall)	¶1 & 20	3938
GUADALUPE COUNTY—		
Riddle, Krueger 1, Thompson sur.	*	1100
MEDINA COUNTY—		
Wagener, Medina A-20 (Chicon Lake)	2	241
LAREDO DISTRICT		
Bridwell, Ancira 10 (N. Sweden)	350	4778½
Cox & Hamon & Gorman-Yoakum, Hoffman 11 (Hoffman)	30	2741
Hiawatha, Southland 6 (N. Sweden)	300	5505
Magnolia, Ruiz 11 (Samosa)	30	2455
Mortimer, Peters 2-A (Peters)	¶10	2598
Republic, Buoy 2-A (3) (N. Sweden)	600	3895
Reynosa, Rodriguez 3 (Seven Sisters)	*	3100
Southwood, Rossi A-3 (N. Sweden)	450	4792
Standard, Rossi 1-A (N. Sweden)	250	5335
JIM HOGG COUNTY—		
Darby, Holbein 4-B (Las Animas)	¶10 & 25	1833
McMULLEN COUNTY—		
Howard, Claunch 9 (S. Calliham)	5	1235
WEBB COUNTY—		
Campbell & Killam, Thompson 2 (Killam-Oilton)	300	1932
Cox & Hamon, Long 1 (Killam-Oilton)	¶10	2052
Killam, Garcia 33 (Killam)	50	2000
Moore, Martin 5 (Oilton)	179	1884
Mountain Townsite, Fee 3 (Oilton)	75	1904

*Failures; †Junked; ¶Million cu. ft. gas.

Victoria County play opened by outposts.

* * *

Vicksburg sand production in Central Starr County.

Corpus Christi. — Victoria County's hot development program is forseen as a follow-up to an outpost development campaign being commenced in several new or unexplored producing areas. New wells have been commenced in the East Telferner, East Placedo, Hughes, McFaddin, North McFaddin and Bloomington areas in an effort to determine the possibilities of these structures.

Next only in importance from probable development standpoint is the newly-discovered Turkey Creek, of West Saxet, district of Nueces County. Expanded 1500 feet to the east by its second producer, the field bids well to receive a quick development program. Wells now drilling, if successful, will establish approximately 1000 acres of production, much of which is in small leases.

The field's extension was provided by Renwar Oil Corporation's Charles McKinzie 1, which cored the Douglas sand in the Frio at 5813-30 feet, shale to 5843 feet and sand carrying an oil odor to 5857 feet. A drill-stem test from 5825-30 feet resulted in the well flowing through ¼ and ⅜-inch chokes in 13 minutes and continuing to flow 30 minutes after the tool was closed. The test developed 127 pounds pressure and recovered 12 thribbles of oil when pipe was pulled. A drill-stem test at 5843-57 feet recovered 2000 feet of salt water with a good gas blow in 16 minutes. Pipe was set on bottom at 5837 feet and casing is being perforated for completion.

To the northeast in San Patricio County, Plymouth Oil Company was laying water line to Brigham 1, Section 62, on a geophysical prospect. The well ran a drill-stem test at 5029-43 feet, in a Frio sand, and recovered 90 feet of oily mud, 720 feet of mud and gas with a slightly brackish taste, and 110 pounds working pressure in 10 minutes. It was cored to 5045 feet and shut down for water.

Union Producing Company's A. B. Simmonds 1, 2½ miles northeast of the Agua Dulce field, Nueces County, is a large gasser spraying oil or distillate after casing was perforated at 4810-35 feet. It is showing a working pressure of 1850 pounds through ¼-inch choke on tubing and 1900 pounds on casing. Shut-in pressure equalized at 1950 pounds. The test originally had been drilled to 8710 feet but was plugged back. This well is considered by some to be an entirely new Frio sand pool while others classify it as an extension to the present Agua Dulce area.

Mirando district results for week are negative

Laredo.—Program to extend the Ezzell field to the southwest in McMullen County hit its first snag when Edwin M. Jones' Harry Ezzell F-2, SE NW Section 29, failed to find any Ezzell sand. It was carried ahead, picking up the Mirando at 1558 feet and Pettus at 1704 feet. The well was abandoned at 1728 feet. The sand condition was believed to be a local situation and rig was skidded 660 feet for a new test. The failure is in turn one location from a producing well.

The Ezzell field is one of the key shallow districts of the Mirando district with a sizeable producing area already proved and neither end along strike definitely defined. Production comes from a 1500-foot Jackson sand, corresponding to the Loma Novia.

Benedum & Trees' F. Vaello Puig 10, easternmost well in the Main North Sweden field, Duval County, was a disappointment in the Gravis, or discovery sand. It found sand at 4808-9 feet, and at 4812-17 feet. A 20-minute drill stem test from 4799-4817 feet developed 40 feet of oil, 500 feet of salt water and 27 pounds pressure. Completion is being effected in the Parr sand, which on a drill stem test at 4762-69 feet flowed in 15 minutes. There are several wells nearly a mile to the east, but they are producing in a separate lens above the Parr and Gravis zones.

Pettus sand production holds most interest in the field at this time, an active program being underway along the western side of the field to complete producers in this 5300-foot zone.

Darby Petroleum Corporation and Manahan Oil Company's R. 4-B, one location north and one location west of the discovery oil well of the Las Animas field, Jim Hogg County, is a gasser spraying a little oil. The test found sand 1800-33 feet and completed in the last 7 feet of the formation. High gas pressure has hindered oil production in this area.

Circle Oil Company was reported preparing to move right to northeast portion of Section 5, 4 miles southwest of the North Sweden field, Duval County, for a second Cockfield sand test. It is reliably reported to have had several interesting shows, one in the Jackson at 4318-22 feet where a drill-stem test developed 180 feet of oil and 100 pounds pressure in 10 minutes but was not completed due to thin sand section. It had an elevation of 422 feet, derrick floor, topped Jackson at 3865 feet, Hockleyensis at 4120 feet, Dibollensis

at 5017 feet, Cockfield at 5040 feet, and showed a thick sand section in the Cockfield which carried shows of oil, gas and salt water. This is one of the most important recent wells drilled in Duval County as it definitely indicates an extension to the North Sweden field of sufficient importance to place the area in possible 50,000,000-barrel class.

Central Starr County wildcat is a producer

Mission.—Third attempt proving a charm, Transwestern Oil Corporation with D. Davenport has opened a Vicksburg sand field on the T. B. Slick estate ranch in central Starr County. Likewise, it was the company's third strike in South Texas out of as many consecutive wildcats.

The new producer is T. B. Slick School 1, 990 feet from the east line and 330 feet from the south line of Survey 266, 16 miles north of the Samfordyce field. It is 660 feet north of T. B. Slick Estate 1, which was junked after an attempted blow out.

This well encountered a sand at 4175-4262 feet late last summer. A drill stem test at 4170-93 feet developed 140 feet of mud with oily odor and 410 pounds pressure in four minutes. Another test at 4193-4232 feet showed 470 pounds pressure with 240 feet of mud carrying oily odor, this test being for a duration of 5 minutes. Bottom-hole pressure at 4193 feet was 1780 pounds and at 4232 feet it was 1910 pounds. Elevation is 472 feet, derrick floor. The well is at the top of the Vicksburg at this level.

Carried ahead to 6862 feet, drill pipe stuck and was cut out to 6702 feet. It attempted to blow out several times, which likely was responsible for the sticking of the pipe. Casing was set at 4341 feet after the fishing job was completed and perforations were made 4212-30 feet.

On February 4 the well was still cleaning, showing a large volume of gas through 7/64-inch choke and showing a tubing pressure of 1425 pounds and 1125 pounds on casing. It was still making considerable wash water and mud but had not sprayed any oil. It is expected to develop into a distillate producer.

Atlantic Refining Company's Weslaco strike in Hidalgo County, after being plugged back from its first completion at 8990-9005 feet, is again on production, this time at 8634-42 feet, where 24 perforations were made. The test flowed an estimated 7,500,000 cubic feet of gas, 61 barrels of 51.5 gravity white distillate and 16 barrels of sweet water in 24 hours. The flow was through ⅜-inch tubing choke with pressures 2425 pounds and casing pressure 2450 pounds. The well is American Rio Grande Land and Irrigation Company 1, Section 175. It is the deepest producer in South Texas.

Caldwell Edwards limestone wildcat being completed

San Antonio.—Attempts were being made to complete an Edwards limestone wildcat in Caldwell County as the week closed. Mac-Wag-Tree Oil Company's A. C. Roberts 1, on the Brownsboro prospect two miles north of the northeast end of the Salt Flats field, was swabbing at 2633 feet, 20 feet in the limestone.

The test, in a 134-acre lease in the William House Survey, topped the Austin chalk at 2285 feet, had its base at 2331 feet, showed no Eagleford, went into the Buda at 2331 feet, Del Rio at 2491 feet and Georgetown at 2570 feet. The section between 2531-69 feet (lower Buda) is said to have carried light oil shows. The Edwards was topped at 2613 feet with oil odors and apparently no sulphur water to 2533 feet. Pipe was landed at 2517 feet to test the entire section. Information from the well varies, but the above records generally are accepted to be correct.

Another interesting wildcat along the fault zone is a newly started operation by Hamill & Hamill on the Brietzke tract in the Rodriguez Survey, southwest of New Berlin in Bexar County. The well is in the vicinity of several Edwards limestone tests drilled by Dixie Oil Company several years ago, one reported to be seeping considerable oil. This prospect has been looked upon as a possible field for several years, but considerable drilling has thus far failed to develop anything.

TEXAS GULF COAST

Chambers off-shore project making production test.

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Dickinson, Hastings get usual weekly extensions.

Houston.—Standard Oil Company of Texas and Salt Dome Oil Corporation's State 1 in Galveston Bay, Tract 118, off Cedar Point, Chambers County, was preparing to run an electrical logging device after fog lifts. The hole is bottomed at 6030 feet. If the well shows evidence of commercial production, casing will be set. The test has already indicated it would open a new oil field when sand and shale showing oil was cored down to 6030 feet. It has logged geological markers approximately 500 feet higher than other wells in the district. It is now in the Lower Marginulina and will core for the Frio. It topped broken formation at 5830 feet with shows of oil and gas. The best sand logged was gas sand at 5915 to 5922 feet, soft saturated oil sand from 5956 to 5963 feet, and three feet of oil sand from 5964 to 5967 feet. Discorbis was encountered at 5136 feet, Heterostegina at 5498 feet, Round Marginulina at 4618 feet and Flat Marginulina at 5679 feet.

Standard Oil Company of Texas is drilling the wildcat and it is the first venture in the Gulf Coast for this operator. Every precaution has been taken against blowouts and polution. Seventy-seven feet of 24-inch drive pipe was set, 16-inch casing set at 268 feet, and 10-inch at 1856 feet. It is being drilled in 8 or 10 feet of water and the equipment is on piling.

The second water project on the Texas Gulf Coast which is attracting attention is I. E. Harwell's State 1, 150 feet off the shore line of Jefferson County, on State leases in the Gulf of Mexico, in Block 720.

No information is available as to what depth, sands, or geological markers the well has encountered. But according to reliable sources it was drilling around 3700 feet in shale. At the senate investigation of the land department at Austin last week it was reported that this test had logged several sands which would make an oil well. It has logged gas sands at 2640 to 2700 feet and oil sands at 2796 to 2812 feet.

Dickinson, Galveston County, may be extended 2½ miles southeast by Humble Oil & Refining Company's Peters 1, J. W. Lytle Survey. At the end of the week 2½-inch tubing was being run for a production test. Casing was perforated with 30 shots from 8223 to 8244 feet after the hole had been drilled to 9355 feet in salt water sand and plugged back to 8555 feet. Cement was drilled out to 8352 feet. Gas sand was logged from 8026 to 8040 feet and oil sands from 8218 to 8223 feet. The test is 13,000 feet from the so-called Gillock production and 12,000 feet southeast of production at Dickinson. Humble Oil & Refining Company made location for Fream 1, 2900 feet southeast of the so-called Gillock production

Beeville.—A new Pettus sand oil field for Bee County, first in this horizon in 1938 in the South Texas district, was uncovered when Dirks Brothers' Magnua Beck 1 encountered oil and gas sand at 4215 feet. A drill stem test at 4213-25 feet recovered 200 pounds pressure, four feet of oily mud and one quart of free high gravity through ¼- and ⅜-inch chokes in 3½ minutes. The test logged gas sand at 4215-20 feet, shale at 4221 feet, oil sand to 4226 feet, cap to 4228½ feet, salt water sand to 4263 feet and shale to 4273 feet, bottom of the hole. Casing was set on bottom and production will be obtained through gun perforation at 4221-25 feet.

The well is located 1901 feet from the north line and 257 feet from the east line of Section 17, Jose Maria Uranga Grant, about 1 mile north of the town of Normanna, 2 miles northeast of the Normanna pool and 1 mile south of the East Tuleta production, nearest oil in the same sand.

Second Pettus sand strike of the week in the Pettus district was indicated February 4 with James B. Chew and Hantho Nelson, Inc., setting casing on a saturated sand at 5073-76 feet in McNeill 1. The well is 7 miles west of Largarto and is 2900 feet north of Dirks Brothers Daugherty 1, drilled last year. The latter had an interesting showing but failed to materialize as a producer. The potential producer is in the Parks Survey.

last week. It is southeast of Pan American Production Company's Craig 1, gas well.

Humble Oil & Refining Company is driving piling to drill a deep core hole on State lands offshore of Jefferson County in the Gulf of Mexico. State 1 is in Tract 8.

The second oil well to be completed on the southwest side of Orange field, Orange County, in the new Frio sand discovered by Tillery & Ryan some time ago is Gulf Oil Corporation's Orange National Bank 1. It made 620 barrels daily through a ¼-inch choke with a tubing pressure of 950 pounds and a casing pressure of 1150 pounds. It is an east offset to the discovery well. It logged oil sand at 5908 feet and was drilled to 5922 feet. Seven-inch casing was set at 5900 feet.

Glenn H. McCarthy abandoned another well at Orange. Brown 2 was drilled to 6756 feet and an electrical logging device run.

Orange is taking on renewed activity since new sand was found on the southwest side. Six rigs will be active in the area by the end of the month and several more will be added by the end of March.

Hastings, Brazoria County, was extended north last week by E. N. Hailey and Sensia Oil Company. E. N. Hailey's Blummer 1, H&TB Section 28 made 600 barrels daily at 6059 feet and Sensia Oil Company's Blummer 1 made 585 barrels daily from 6096 feet. On the west side of Hastings, Humble Oil & Refining Company completed Lerew 1, H&TB Section 38, flowing 26 barrels per hour through a ¼-inch choke from 6080 feet. This well is near a dry hole.

Call Still Only One Well

Call, Newton County, takes on the appearance of a "one well field" as it has only the discovery well producing. Houston Oil Company's Pevey Moore 3, H&TC Section 41, was abandoned at 7366 feet in salt water sand, logged from 7356 to 7366 feet. A drill-stem test at 7120 feet showed a little oil.

Humble Oil & Refining Company announced location for Kinkendall 1 at Silsbee, Hardin County. It is a north offset to Republic Production Company's Howell 1 and in the G. B. Brooks Survey.

At Tomball, Harris County, Amerada Petroleum Corporation and Stanolind Oil & Gas Company abandoned Bell 1, J. House Survey, which blew out at 2364 feet. The well made an estimated 20 to 30 million cubic feet of gas and 600 barrels of fresh water daily. Gas sand was logged at 2045 to 2060 feet.

Over a mile southeast of the discovery well at Fairbanks, Harris County, H. E. Williams made location for Vega 1, center of lot 3, G. Williams Survey.

In the Lissie area, Wharton County, Strake Petroleum Corporation's Strunk 1, L. P. Jennings Survey, was coring shale at 9250 feet last week and had not encountered the Wilcox formation. The wildcat has indicated it would make some kind of a well in sands at 6750 feet and 6950 feet.

In the Garwood area, Colorado County, Texas Crusader Oil Company made a drill-stem test on Hancock & Broussard 1, Hill & Duffner Survey. It showed 140 feet of mud and 400 feet of salt water through ¼-inch chokes. The test was made from 5887 to 5913 feet.

Villa Platte production being extended southwest.

* * *

Number of tests active at depths below 10,000 feet.

Lake Charles.—Continental Oil Company's Louisiana Land and Improvement Company 1, indicates it will extend Vila Platte, the first Sparta, producing field in South Louisiana, 3600 feet south and west. Last week Sparta sand was logged from 9017 to 9040 feet. Oil sand was still being cored and probably the well will go below 9100 feet before casing is set. Top of the Sparta was at 8645 feet and this marker is between 40 and 50 feet lower than the discovery well. The discovery well at Villa Platte has been averaging around 160 barrels of 47 gravity oil daily since completion.

West of the discovery well at Bayou Des Allemands, St. Charles Parish, Amerada Petroleum Corporation and Louisiana Land & Exploration Company were preparing to perforate casing from 6886 to 6889 feet in St. Charles Land Company 1, Section 13-15s-20e. The last test, from 6909 to 6912 feet, showed 46 stands of salt water. The operators have made location for Gheens 1, 940 feet south of the discovery well.

Amerada Petroleum Corporation and Louisiana Land & Exploration Company's discovery well at Raceland, Lafourche Parish, was making between one and two percent salt water last week. South Coast Corporation 1 was completed for 733 barrels of 34.9 gravity oil daily through a ¼-inch choke after casing had been perforated between 10,183 and 10,201 feet with 72 shots, and from 10,205 to 10,208 feet with 12 shots.

North of production at Lake Long, Lafourche Parish, Fohs Oil Company's State 3 was down to 11,355 feet in shale last week and is the deepest active test in South Louisiana. The operators will carry it down to the sand which was found at Lirette, Terrebonne Parish.

Two new wildcat locations were announced in the Louisiana Gulf Coast

Texas drilling permits total 306 for week

The Texas Railroad Commission this week approved 306 permits for drilling new wells in Texas, 137 more than were granted the week before.

The East Texas field advanced to first place with a total of 109 permits, including 74 in Gregg, 27 in Rusk and eight in Upshur County. There were 20 new locations reported from the East Central Texas District.

The West Texas District listed 42 locations including 13 in Upton and 10 in Ector County. West Central Texas operators reported 14 permits.

There were 41 permits approved in the Gulf Coast Area, including 11 in Nueces and 10 in Galveston County. Southwest Texas operators reported 45 locations.

Permits were approved for 24 new locations in the North Central Texas District, including 14 in Wichita County. Eleven permits were granted in the Panhandle.

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CALL—		
Houston, Pevey Moore 3	*	7366
DICKINSON—		
Stanolind, State 2 (wo)	¶2	8065
HANKAMER—		
Gulf, Boyt 5 (wo)	625	3339
R. Olsen Oil Co., Ezzell 1-B	107	2613
HASTINGS—		
E. N. Hailey, Blummer 1	600	6059
Humble, Lerew 1	624	6080
South Texas Grain 9	112	6107
H. A. Potter, Blummer 1	585	6096
Stanolind, Drake 24	611	5491
HUMBLE—		
Wilson Oil Co., Wheeler & Pickens 10	44	1416
LOCHRIDGE—		
E. J. McCurdy, State 1	122	6406
Shell, Ramsey B-4	288	6369
ORANGE—		
Gulf, Orange National Bank 1	620	5922
Glenn H. McCarthy, Brown 2	*	6756
SANDY POINT—		
H. J. De Arman, Fite 1 (wo)	60	6458
TOMBALL—		
Amerada-Stanolind, Bell 1	*	2364
WITHERS—		
Texas Co., Thompson 5	282	5551
WALKER COUNTY—		
G. W. Markel et al, Hall 1, w of Huntsville, D. B. Guerran sur.	*	2000

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANSE LA BUTTE—		
Ayres Brothers, Begnaud 7	150	1598
EAST HACKBERRY—		
Union Sulphur, Watkins 43	¶1	3752
GIBSON—		
Shell, Pelican 4	950	9508
NEW IBERIA—		
Texas Co., Bryant 3	300	5098
NORTH CROWLEY—		
Humble, Ohlenforst 2	730	8119
ROANOKE—		
Humble, Taylor 5	480	8825
VALENTINE—		
Pan American Prod. Co., Harange 15	*	5932
LAFOURCHE PARISH—		
Amerada-L. L. E., South Coast Corp. 1, Raceland area, 34-15s-19e	733	10208

*Failures; †Junked; ¶Million cu. ft. gas.

last week. On the Scott prospect, Lafayette Parish, Continental Oil Company made location for Foreman 1, 761 feet east and 307 feet north of the southwest corner of Section 36-9s-3e. On the Henderson salt dome, St. Martin Parish, The Texas Company's St. Martin Land Company 11 is 1725 feet south and 1367 feet east of the northwest corner of Section 21-8s-7e, or 1550 feet south and 1000 feet west of St. Martin Land Company 9.

Humble Oil & Refining Company's Schwing 1, Bayou Blue area, Section 67-9s-11e, Iberville Parish, was trying to get an electrical logging device to 6837 feet. When trying to run the instrument it was found that the hole was bridged. Swabbed at 6837 feet, Schwing 1 showed salt water. Sand showing oil was logged from 6829 to 6837 feet. This is a new sand for the field.

Two wells are drilling below 10,000 feet at Lafitte, Jefferson Parish. The Texas Company's Marrero 1, Section 21-17s-24e, north offset to State Bayou Norman 1, which was drilled below 12,000 feet and blew out, was coring shale at 10,265 feet. A sand showing oil was logged from 10,063 to 10,072 feet. Marrero 1 will probably be drilled below 12,000 feet to test the new sand. L. L. E. Lafitte 9, Section 20-17s-24e, was drilling at 10,070 feet in shale last week after encountering a showing of oil from 10,020 to 10,055 feet.

The deepest well to be drilled at Jeanerette, St. Mary Parish is Herton Oil Company's Roanes 1, Section 58-13s-8e. Last week it was in sand at 10,870 feet, and coming out with a core.

The discovery well at Horseshoe Bayou, St. Mary Parish, has been averaging around 717 barrels of pipe line oil daily during the past week. The field was discovered by The Texas Company, below 10,000 feet.

Humble Oil & Refining Company's N. J. H. Daly 1, 2500 feet southeast of production at North Crowley, Section 44-8s-3e, Acadia Parish, was coring shale at 8554 feet and has evidently missed the 8100-foot sand. The operator's Ohlenforst 1, Section 34-8s-1e, was completed making 730 barrels of 37.2 gravity pipe line oil daily through a ¼-inch choke from 8119 feet.

Superior Oil Company is lubricating State 1, offshore of Cameron Parish, in Gulf of Mexico, with oil after sticking the drill pipe at 9318 feet. After pipe is loosened it will drill deeper.

Tulsa.—A meeting of the Technical Club of Tulsa, held January 31, initial meeting of 1938 for the group, saw motion pictures of a hunting trip in Mexico, taken by W. W. Baker of Sinclair Prairie Oil Company.

Ground was broken on January 18 for the $750,000 structure at the New York 1939 World's Fair which will house the exhibits of the gas industry, the industry having been given the distinction of being the first industrial building to start construction on the fair grounds. Colorful ceremonies planned by the exposition staff and Gas Exhibits, Inc., accompanied the groundbreaking in which exposition officials, gas utility executives, gas appliance manufacturers, officials of the American Gas Association and Association of Gas Appliance & Equipment Manufacturers, and others, participated.

NORTH LOUISIANA

Lisbon production extended southwest, southeast.

* * *

Two wildcat operations prove disappointing.

* * *

Unit plan proposed for Webster Parish shut-in field.

Shreveport, La.—The Lisbon field was extended in two directions last week. Three fourths of a mile southwest of former production in the basal Glen Rose lime, C. R. Schuster's Sallie Lloyd 1, C S½ SW SW 2-20n-5w, Claiborne Parish, was completed at 5277 feet, without use of acid, flowing 286 barrels in first 17 hours through 10/64-inch tubing choke with tubing pressure 80 pounds, and casing pressure 210 pounds. Later the well was allowed to flow at the rate of 35 barrels hourly before being choked back to its allowable. This test was the largest extension in some time. With an elevation of 206 feet it logged porous lime from 5257 to 5271 feet, 7 feet of this being heavily saturated. Five and one half inch casing was cemented at 5248 feet.

Almost a half mile southeast of former production, Lyons & Neely's H. W. Patton B-1, C N½ SE SE 6-20n-4w, Lincoln Parish, was completed after acidization at 5304 feet, flowing the first 6 hours at the rate of 95 barrels per hour through ¾-inch choke and later being choked to 45 barrels per hour through ¼-inch choke. This test had 14 feet of saturation topped at 5279 feet; elevation is 241 feet.

Two Wildcats Disappoint

Two important wildcats in North Louisiana proved disappointing last week, one of them being definitely abandoned. The latter test is Arkansas Fuel Oil Company's Franklin Realty Company 1, C NE NW 20-11n-9w, Red River Parish, abandoned at 7155 feet after flow of salt water was encountered. E. T. Oakes, H. D. Easton and associates' Griggs 1, C SW 36-18n-1w, Lincoln Parish, after showing only a little gas and distillate after two acidizations at 5932-41 feet in basal Glen Rose lime where 5½-inch casing cemented at 6121 feet had been perforated with 48 shots, was shot with 7 quarts of nitroglycerin but failed to improve and operators are planning to shoot casing again at 5300 feet.

Magnolia Petroleum Company's Frank Sexton 1, C SW NE 32-23n-9w, deep test in the shallow Shongaloo gas field, Webster Parish, was drilling hard shale and lime at 6808 feet. The Glen Rose section showed no unusual thinning in this test. Seismograph units are re-checking the entire northwest part of Webster Parish and it is reported a new deep shooting picture has been worked out around the village of Sarepta.

J. P. Evans, discoverer of the Glen Rose gas-distillate field at Dubberly, Webster Parish, township 18 north, range 9 west, where there are three wells, shut in for pipe line outlet, is expected to begin unitization of that block soon. The agreements will specify, it is reported, one well to each 160 acres if gas is found, and one to each 40 if oil is found, a ratio of 10,000 to 1 to determine classification. Standard Oil Company of Louisiana is abstracting titles to its Bienville Parish block in township 18, range 6 west, near Gibsland, and is expected to drill thereon during the spring.

Slow progress in unitization of its large block in the Pine Island district, Caddo Parish, in townships 20 and 21 north, ranges 14, 15 and 16 west, may cause Stanolind Oil & Gas Company to defer drilling its contemplated deep test there for several months it is said.

W. J. Furlong, Jr., and associates are running a 3000-foot string of casing to protect hole in E. M. Clark 1, NW SE NE 10-20n-7e, Morehouse Parish, that will be deepened 500 feet from 6025 feet in lower Marine to the Permian lime.

Seeking oil production from the Woodbine on the southeast flank of the Sabine Uplift, Joseph E. Popkins of Washington, D. C., has derrick up for a test to that horizon at Peavy-Wilson Lumber Company 1, NWc 36-7n-9w, Natchitoches Parish on a 4000-acre block. South of the Sabine Uplift and in parts of Sabine, Vernon and Rapides Parishes, W. T. Burton has secured geophysical option on 88,000 acres of land from four lumber companies and now has one geophysical party working the block. Most of the acreage is in Vernon Parish.

Add Six at Rodessa

Six new wells were added in the Rodessa field last week to bring the total completed there since oil was discovered in that field in July, 1935, to 905 oil wells.

Marion County, Texas, accounted for 5 of the new wells, it being the most active part of the field. It also secured 6 new locations. Cass County, Texas,

secured one location. The Louisiana side received 2 locations, and the Miller County, Arkansas, side received two new operations.

The Texas Railroad Commission in giving the Texas side of Rodessa its February allowable of 34,850 barrels allocated 7,088.05 acres as proven to production. The allowable order lists average bottom-hole pressure at 1915.84 pounds and placed the acreage factor for the month at 1 acre equals 2.6922490 barrels. The bottom-hole pressure factor was set at 1 pound equals .02637303 barrel. Allotments are based half on acreage basis and half on bottom-hole pressures, a total of 16,100 barrels being allotted to each with high gas-oil wells and special allowables being given 2650 barrels.

Lisbon Allowable

Total bottom-hole pressures for the Lisbon field were given at 182,554 pounds in the February allowable order for that field as promulgated by the Louisiana Conservation Commission, which set the daily field allowable at 10,000 barrels with an augmented daily field allowable of 10,100 barrels. Of the allowable 7575 barrels is alloted to acreage and 2525 barrels to bottom-hole pressures, the area allotted to oil wells being 3,252.3 acres. The acreage factor is 1 acre equals 2.32912 barrels and the bottom-hole pressure factor is 1 pound equals .01383 barrels. Allocations were made for 179 wells in the field.

Total bottom-hole pressure for the lower Marine horizon in the Cotton Valley field (Webster Parish) classified as a gas field, although it produces gas and distillate, was given as 128,700 pounds in the February allocation order that gave the daily field allowable there as 52,000,000 cubic feet of which 39 million feet is allocated to acreage and 13 million feet to bottom-hole pressure. A total of 2080 acres was allotted to producing wells. The bottom-hole pressure factor is 1 pound equals 101.0101 cubic feet. The field has 31 Lower Marine wells. The 3 Travis Peak oil wells are not pro-rated.

NORTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Standard, Spearman 1, 3-23n-16w...	745	5987
CLAIBORNE PARISH (Lisbon)—		
Atlantic, Bean B-2, 32-21n-4w	1248	5206
Schuster et al, Lloyd 1, 2-20n-5w...	385	5271
Sloan & Zook Co., Patton Est. 6, 1-20n-5w	288	5345
LINCOLN PARISH (Lisbon)—		
Lyons & Neely, Patton B-1, 6-20n-4w	1752	5303
CADDO PARISH (Pine Island)—		
Louisiana Oil Co., Muslow C-3, 9-20n-15w	50	2122
Muslow D-3, 5-20n-15w	15	2214
DE SOTO PARISH (Bull Bayou-Naborton)—		
Jal Drlg. Co., Scales A-10, 36-13n-12w	93	2455
RED RIVER PARISH (Bull Bayou)—		
J. C. Prine, Haynes 1, 20-13n-10w..	*	2555
RED RIVER PARISH (East Point)—		
Ark. Fuel Oil Co., Franklin Realty Co. 1, 20-11n-9w	*	7155
SABINE PARISH (Zwolle)—		
W. L. Posey, Hale 1, 12-7n-13w...	30	2135
Hunter Co., Long-Bell 2, 23-7n-13w	*	2679
WEBSTER PARISH (Cotton Valley)—		
Ohio, Warren Cox 2, 23-21n-10w....	486	8110

*Failures; †Junked; ¶Million cu. ft. gas.

Shreveport, Louisiana.—Forty-six drilling permits were authorized last week by the Louisiana Conservation Commission of which nineteen were for North Louisiana parishes as follows: Caddo, five (three for Rodessa); Claiborne, three, all in Lisbon; DeSoto, three; Lincoln, two, both for Lisbon; Morehouse, one; Ouachita, one, and Sabine, four. Those in south Louisiana were divided among the following parishes: Acadia, three; Calcasieu, three; Cameron, three; East Baton Rouge, one; Evangeline, one; Iberia, three; Iberville, two; Jefferson, one; Jefferson Davis, one; LaFourche, one; Plaquemines, three; St. Charles, one; St. Landry, one; St. Martin, one; St. Mary, one, and Terrebonne, one.

Three Lower Marine wells completed at Schuler.

* * *

Columbia County wildcat has Permian top low.

El Dorado, Ark.—Three Lower Marine (Jones) sand wells were completed in the Schuler field, Union County, last week to bring the total of producers in that horizon in that area to 14. All of the new wells, which produce sour crude, are in Section 18-18-17.

Schuler has 12 other tests drilling, 2 rigging and 4 locations were announced last week.

After completion 2 of the 3 wells added during the last week later were killed after their gas/oil ratio exceeded 2000 to 1. These were Phillips Petroleum Company's Justiss 2, SEc Lot 6, NW 18-18-17, and same company's Marks 2, NEc Lot 2, SW 18-18-17. The former made 320 barrels of oil and a large amount of gas in a 17-hour period and the latter made 510 barrels in 24 hours through 20/64-inch choke.

Kerrlyn Oil Company's Barnett 1, SE SW NE 14-17-20, Columbia County wildcat, whose outcome will have an important bearing on Permian lime exploration southeast from the new Buckner field toward the Schuler district, last week logged top of Permian lime at 7618 feet, somewhat lower than anticipated but not low enough to condemn the well; elevation is 321 feet.

The test had just unhung drill pipe at 7590 feet and after coring to 7649 feet again hung pipe. Between the top of the Permian and 7649 feet, however, some interesting cores were recovered as follows: 7620 to 7639 feet, hard dense lime; next 9 feet dense lime with strong odor of sulphur; and from 7639 to 7649 feet 8½ feet of the core was hard dense oolitic lime and the other 1½ feet porous brown lime with taste of gas.

Lyons & Neely's Lillian Taubel 1

Fair Warning

Don't tell Mr. Roosevelt — but we're in business to make money. However, we don't tighten up our belts in the morning and go out looking for the almighty dollar. We've found it sufficiently profitable to see if there isn't something we can do for an oil man. In thirty years we have become rather adept at being useful, and we back our efforts with a stock of everything operators in our area prefer. We keep our old customers and get some new ones. We'll get you, if you don't watch out — and you'll like it!

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SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston

(Tatum Fee), C SE NW 18-16-22, which checked favorably with the discovery well at Buckner in SW SW 8-16-22, Columbia County, on anhydrite markers at 3279 and 3298 feet, last week was drilling shale and lime at 4944 feet. Standard Oil Company of Louisiana's Bodcaw 1, C SE NE 18-16-22, spudded and set 209 feet of 13⅜-inch casing. In the Lake Village area of Columbia County a geophysical unit is working for Tide Water Associated Oil Company that recently drilled a test in that area. In Hempstead County, Magnolia Petroleum Company has had a geophysical unit for a month.

Union County received the hottest play of last week. Miss Ruby Coffee, Lion Oil Refining Company and The Hunter Company being active in leasing around Township 18, Range 12. W. H. Murch for Fohs Oil Company, leased around Section 16-19-13, in an area where H. L. Hunt and Marine Oil Company later became active. H. L. Hunt is the largest lease owner in this area although some is also held by Magnolia Petroleum Company and Root Petroleum Company.

Kerrlynn Oil Company's shooting unit was working in Township 18, Range 12. Atlantic Refining Company has a seismic unit working in Township 17, Range 17 north of Schuler and at Schuler, Township 18, Range 17, Amerada Petroleum Corporation is still shooting. Standard Oil Company of Louisiana has a shooting unit working in Township 18, Range 16. A crew of another company is reported working 7 miles southeast of El Dorado in the direction of Strong.

El Dorado, Ark.—Eight drilling permits were issued last week by the Arkansas Board of Conservation, as follows: Miller County—Freda Lasse Layton, Hugh McKellar Estate A-1, 200 N of SL and 330 W of EL Frac. W½ Frac. W½ Frac. Sec. 15-20-28; Hugh McKellar Est. A-2, 860 N of SL and 330 W of EL Frac W½ Frac. W½, Frac. Sec. 15-20-28; Ouachita County—A. H. Tarver, Mrs. Guy Smith 1, 300 N & W SEc NE SW 16-14-29; Union County—W. D. Wingfield, Trustee, Kidd Estate 1, 300 S & W NEc NW SW 15-18-13; Lion Oil Refining Company, Edna Morgan A-5, 330 S & W NEc Lot 7, SW 18-18-17; Myrtle Mayfield 1, 330 N & W SEc Lot 3, NW 18-18-17; D. S. and J. C. Morgan C-2, 330 N & E SWc SE SE 18-18-17; Phillips Petroleum Company, Marine 2, 330 N & 990 W NEc 20-18-17.

SOUTHEASTERN STATES

Mississippi depth record getting more feet daily.

* * *

Amory gas field depleted and off of production.

Jackson, Miss.—Sun Oil Company and associates' Talley 4, SE NW 33-4n-15w, Lamar County, where a salt dome was discovered, continued last week to add footage to Mississippi's drilling depth record of 8002 feet, being at 8330 feet in broken lime and red shale at that depth.

Phillips Petroleum Company's J. J. Newman Lumber Company 1, SE SE SW 21-2n-10w, Perry County, which is said to be contemplated as a 7500-foot test, was shut down for rig repair at 6616 feet.

Mississippi's first commercial well, the discovery gasser of the Amory field, Monroe County, in the northeast part of the state, which accounted for four small gas producers, was finally abandoned last week, after its gas volume and pressure fell so low it was taken off the gas company's line. The well was Amory Petroleum Company's Carter 1, completed October 6, 1926, at 2412 feet, making slightly over 5,000,000 cubic feet daily initial open flow. The three other gassers later completed in the field have already become depleted and abandond. There has been some talk of deepening or re-working the well which recently has been furnishing 200,000 cubic feet daily to the town of Amory.

Talk is heard of a proposed bill that may be introduced in the present biennial session of the Mississippi legislature, now in session, amending the original oil and gas statute enacted in 1932. The rumored amendment would provide for allocation and proration of gas wells and would amend Section nine of the present statute.

When Will WAR Be Declared?

It's just a matter of time until we have another declaration of war, another draft, and another invasion of some foreign country.

You read what happened to the war referendum bill. The politicians don't want you and I to have anything to say about when, where and who we fight. They'll do the brain work; we'll do the bleeding.

The situation probably worries you, as it does us. Maybe you have boys at the right age for gun fodder. You don't want war except to repulse an invasion of American soil.

So let's do everything we can to guarantee PEACE. For suggestions about what to do, address:

AMERICAN INDUSTRIAL PEACE ASSOCIATION

P. O. BOX 1080

SHREVEPORT, LA.

ARKANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
UNION COUNTY (Schuler)—		
Lion, Morgan B-4, 18-18-17.....	800	7640
Phillips, Justiss 2 18-18-17.....	800	7702
Marks 2, 18-18-17	1056	7700
NEVADA COUNTY (Troy)—		
Union Prod. Pet. Co., Haynie 1, 5-14-20	10	1192
OUACHITA COUNTY—		
Tarver et al, Dean 1, 16-14-19.....	sw	2225

*Failures; †Junked; ¶Million cu. ft. gas.

SYFO CLINOGRAPH

also

SURWEL & H-K Surveying Instruments

SPERRY-SUN WELL SURVEYING CO.

Philadelphia - Tulsa - Houston - Corpus Christi - Long Beach - Lafayette, La. - Bakersfield, Calif.

Kern County test has world record depth.

* * *

Two 6000-barrel completions at Long Beach.

Los Angeles.—Coring at 12,880 feet in hard shale, Continental Oil Company's Kern County wildcat in the Wasco area, K.C.L. A-2, Section 8-27-24, has passed the world's record for depth of the Gulf Production Company's West Texas well, McElroy No. 3, (12,786 feet) by approximately 100 feet. A very few thin stringers of sand have been encountered in the shale giving a fair cut and it is believed that the well will possibly pick up the Vedder sand shortly after passing the 13,000-foot mark. With the exception of one fishing job, progress of the well has been fairly rapid considering the depth.

Two 6000-barrel wells were completed in the Long Beach sector of the Wilmington field during the past week. Bankline Oil Company's U. P. 2, located near the center of Drawbridge Way and Kern Place, was completed at 4146 feet, flowing through a 60/64-inch choke, and was gauged at 7400 barrels daily. It is believed that if the well had been allowed to flow over a longer test production would have built up over 9000 barrels. General Petroleum Corporation also completed a 6000-barrel well in the same general area, S.P. 2, located 4604 feet south and 3233 feet west of the intersection of Pico and Anaheim Streets and on a 24-hour production test flowed 6200 barrels of 20-gravity clean oil on an open flow. On both of the above completions, production is coming from the upper and lower Terminal zones.

There may possibly be long drawn-out lawsuits to establish the ownership of certain tracts of property within the Los Angeles Harbor area, which was at one time swamp land and during recent years has been filled in and converted to heavy industrial use, in the filing of an injunction against Westgate-Greenland Oil Company, which was preparing to drill four wells in the Harbor area. During the past year, several tideland prospecting permits have been filed on the various tracts in the area, with the idea that such property is still considered government lands.

Torrance Starts Small Boom

Completion of Chanslor - Canfield Midway Oil Company's Torrance 33, in the Torrance field, flowing 160 barrels of 27-gravity oil has been the signal for a small boom in the area. Approximately 15 projects are under way, some being drilled from the grass roots but a good percentage deepening old abandoned wells. Due to the gravity of the oil and the accessibility of a ready market, smaller independents and individuals are concentrating on the area.

Standard Oil Company's deep test in the Trico area, Tulare County, in Section 36-24-23, after drilling to 11,446 feet developed a fishing job that could not be recovered and is being abandoned. No showings of any importance have been cored.

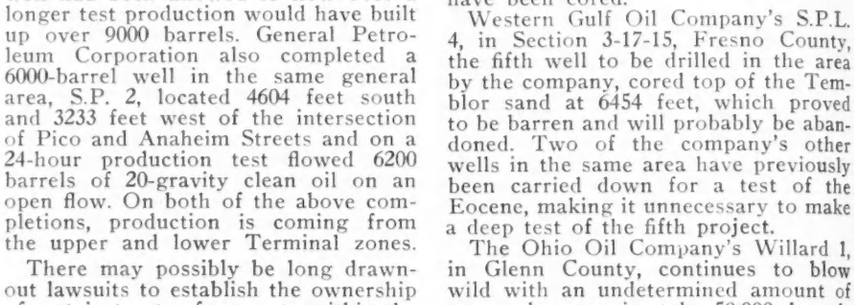
Western Gulf Oil Company's S.P.L. 4, in Section 3-17-15, Fresno County, the fifth well to be drilled in the area by the company, cored top of the Temblor sand at 6454 feet, which proved to be barren and will probably be abandoned. Two of the company's other wells in the same area have previously been carried down for a test of the Eocene, making it unnecessary to make a deep test of the fifth project.

The Ohio Oil Company's Willard 1, in Glenn County, continues to blow wild with an undetermined amount of gas and approximately 50,000 barrels daily of salt water, necessitating the commencement of Willard No. 1-A, 600 feet north of the gasser, which will be drilled as a directional hole in an attempt to kill No. 1.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
DOMINGUEZ—		
Selbar Oil Co., Republic 1	295	4905
HUNTINGTON BEACH—		
Armour Pet., Ambassador	100	2011
Standard, Well A-34	150	4450
MONTEBELLO—		
Texas, Baldwin 18	1440	6520
NORTHWEST LONG BEACH—		
Hilldon Oil Co., Amebco 3	600	4306
TORRANCE—		
Chanslor-Canfield Midway Oil Co., 33	109	4925
WILMINGTON—		
Bankline Oil Co., U. P. 2	6000	3900
General, Harbor Comm. 1	2000	3939
Harbor Comm. 6	1825	4044
S. P. 2	6000	4146
Richfield, R. G. 1	200	3350
Union Pacific, Offset 78	1340	3620
Offset 79	791	3595
E-1	200	3212
Colter & McAdoo, Colter 4	300	3645
Gus Pongratz, Ashbridge 1	600	3676
BELRIDGE—		
Belridge Oil Co., 61	125	8750
FRUITVALE—		
L. C. Simmel, 1	100	3760
Western Gulf, B-31	250	3031
KERN FRONT—		
California Star Oil Co., 80-3	75	2755
McFARLAND—		
Shell, Keystone 1	*	3748
MIDWAY-SUNSET—		
Iroquois Oil Co., 2	175	1779
ROUND MOUNTAIN—		
Shell, Olcese-Lilly 2	150	1597
Marcan Oil Co., 3	300	2058
TEN SECTION—		
Shell, A-32	3048	8170
TULARE COUNTY		
TRICO—		
Standard	†	10446
SANTA MARIA VALLEY—		
Hancock-Bush, Calif. Lands 2	435	4312
SHIELLS CANYON—		
Texas, Shiells 134	150	4480

*Failures; †Junked; ¶Million cu. ft. gas.



New Mexico drilling activity is increasing.

Hobbs, New Mexico.—Lea County is regaining its position as a prominent drilling center in the Permian basin. Authorization of 18 locations in 7 areas the past week for immediate drilling makes a total of 36 projects for the county within a 3-week period. Drilling crews and contractors are again in demand. Completion of these wells will involve an expenditure of more than $1,000,000 for labor, equipment and miscellaneous items, as the cost averages more than $30,000 each.

Vacuum field, which was expanded into a major producing area last year, failed to register a new location. However, two isolated wells in process of competition automatically call for offsets. Magnolia Petroleum Company's State-Bridges 3, C SW SE 23-17s-34e, one mile south of production on the discovery block, but within the proved area, flowed 295 barrels 37.3 gravity oil natural in 11 hours after running tubing. Hole was drilled to 4551 feet, or 523 feet sub sea, with cable tools. Gas volume was not adequate to cause steady flow through casing. First free oil was from lime at 4161-68 feet, and continued at intervals to 4549 feet.

Phillips Petroleum Company's Hale-State 1, ¾ mile northwest of production on the south end, flowed 347 barrels natural in 7 hours at 4500 feet, with an elevation of 4013 feet. The Texas Company's Corbin 1, C NW SW 10-18s-33e, 8 miles west by south of production, cemented 7-inch pipe at

4021 feet in lime, and is due to standardize before deepening.

Eunice field was the largest contributor of new locations, having 4 projects that were forced by offsets. Gulf Oil Corporation made locations for State-Bell 6-F, C NW SW 36-20s-36e, and State-W. A. Ramsey 2, C SW SW 27-21s-36e. Tide Water Associated Oil Company's J. H. Day 2, C E½ NW NW 6-22s-36e, is on the southwest edge. Rig has been installed to drill Continental Oil Company et al's Reed 2-B-23, NE SE NE 23-20s-36e.

West edge of the Monument field added two flowing producers on federal permit land. Continental Oil Company et al's Sanderson 4-B-10, NE SE SE 10-20s-36e, averaged 50 barrels 34 gravity oil per hour on 3-hour gauge through ¾-inch choke after using 1000 gallons of acid at 3890 feet. The partnership's Sanderson 7-A-14, NE SW NE 14-20s-36e, flowed 18 barrels per hour natural through choke at 3867 feet, and rig has been skidded to drill Sanderson 1-B-14, NE SW SE 14-20s-36e. Location has been made for Gulf Oil Corporation's State-Kutter 2-D, C SE SW 8-19s-37e.

The Texas Company et al have rigged up to drill H. G. Moberly 1-B, C NE NE 21-26s-37e, offsetting a producer in the Rhodes area, where wells are completed as gassers then convert into oil producers.

Three-well program for the Hardy sandy-lime area has been ordered by Stanolind Oil & Gas Company on the E. C. Hill permit. Hill 2-C and 3-C are in Lots 4 and 5, respectively, 5-21s-37e, and Hill 2-A is at center Lot 9, 6-21s-37e. Situated near the junction point of the Hardy and Penrose areas, Gulf Oil Corporation's McCormack 3, C SE SE 32-21s-37e, has rigged up.

Sun Oil Company's Lanehart 2, southwest outpost for the Langlie area, is having difficulty in making a commercial well after third nitro shot. Hole was shot before plugging back from 3620 feet to 3325 feet, and shots in the upper section of the sandy-lime failed to develop a steady flow. This area added 3 new operations, including Anderson-Prichard Oil Corporation's Carlson 1, SW SW SW 23-25s-37e, and Langlie 2-D, C NW NE 8-25s-37e. Rig from West Texas has been shipped in by A. R. Eppenauer to drill State-Community 1, NW NE NE 22-25s-37e. Required offsets gained 3 new projects for the Penrose area. These include Bradley Oil Company's Downes 1, C NE NW 5-22s-37e; Humble Oil & Refining Company's Greenwood 2, C NW SW 9-22s-37e; and Sindorf et al's Glier 1, NE NE NE 33-22s-37e. Operations have been started on Stanolind Oil & Gas Company's Myer 4-B, C SW NW 21-24s-37e, Mattix area.

Artificial lift is required by less than 10 percent of the 1494 producing oil wells in Lea County, according to survey compiled January 1 by C. G. Staley, proration umpire. The report reveals that pumping units are in service on 96 wells, while a total of 40 wells are producing with the aid of gas lift equipment. Hobbs field, one of the first major areas to receive attention as a crude source, has 249 oil wells, and only 11 are pumped while 2 are operated on gas lift.

The Lynch area, which has produced 6,248,406 barrels of oil, utilizes pumping equipment on its remaining 13 wells. More wells have been depleted and plugged in this field than any other in the county.

Total wells and method of operation is listed below by fields for Lea County:

Field—	Flowing Wells	Pumping Wells	Gas Lift Wells	Total Oil Wells	Total Gas Wells
Cooper	56	13	19	88	4
Eaves	13	4	.	17	1
Eunice	425	10	6	441	3
Hardy	32	6	.	38	.
Hobbs	249	11	2	262	.
Jal	16	10	4	30	12
Langlie	49	1	3	53	8
Lynch	..	13	.	13	.
Lynn	8	..	3	11	3
Mattix	43	5	.	48	3
Monument	453	7	3	463	1
Penrose	74	7	.	81	.
Rhodes	3	.	.	3	3
Skelly	27	7	.	34	2
South Eunice	41	2	.	43	4
Vacuum	5	.	.	5	.
Total	1494	96	40	1630	44

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Danciger, Turner 3, sw 18-17s-31e..	40	3510
Repollo, West 2, sw se se 9-17s-31e.	22	3757
LEA COUNTY (Eunice)—		
Repollo, White 2, nw ne se 24-20s-36e	184	3866
Stanolind, Gilluly 13-A, c se nw 24-20s-36e	1500	3865
LEA COUNTY (Monument)—		
Continental et al, Sanderson 7-A-14, ne sw ne 14-20s-36e	750	3867
Sanderson 4-B-10, ne se se 10-20s 36e,	2500	3890

*Failures; †Junked; ¶Million cu. ft. gas.

North Dakota deep wildcat shuts down

Minot, N. D.—Standard Oil Company of California's deep wildcat test on the Nels Kamp farm, Wiliams County, in the Nesson flats area, was shut down last week because of a shortage of water. Casing was set to the bottom of the 6750-foot hole and cemented, with drilling expected to resume early in March. The drilling crews, which have been keeping operations on a 24-hour basis, will remain at their headquarters in Ray until operations resume.

Meanwhile, the North Dakota board of university and school lands last week denied application on oil leases covering nearly 8000 acres of state-owned land in the northwestern part of the state. Commissioner Ole B. Stray announced that the only application approved was that of the Standard company for 1400 acres on the Missouri river bottoms between Williams and McKenzie counties. The company also renewed leases on 4680 acres, bringing its holdings of state-owned lands to 6080 acres for which it is paying 50 cents an acre annually.

"The board will not tie up land for individuals who are not financially able to develop the area," Stray said in explaining why other applications were rejected. "The California company is on the site investigating capital to promote oil resources and not speculating." The commissioner added that about 1920 acres of state-owened land in the vicinity are as yet unleased, but that the Standard company indicated it intends to add this to its holdings.

MICHIGAN FIELDS

Two important new districts opened by wildcats.

* * *

Road conditions will delay pending drilling program.

Mt. Pleasant, Mich.—Two important new districts were opened for development this week in Michigan as the result of completion of commercial oil wells in the Dundee limestone horizon.

Chief interest centers on Chapman Oil Company, Michigan Devonian Petroleum Company and Associated Oil Company's State 1, NW SW NE 27-16n-1w, Edenville township, Midland County, which initialed 387 barrels in 18 hours from Dundee lime. The test is located in wildcat territory 10 miles southwest of the Buckeye-Bentley structure and 15 miles northeast of the Mt. Pleasant-Porter structure. Dundee limestone was logged at 3739 feet with a show of gas at 3753 feet where the hole was reduced. At 3790 feet good saturation and free oil was logged. Operators set 5-3/16-inch casing at 3753 feet and drilled two feet into the pay when the well flowed. During the first 18 hours under test, the well flowed by heads at 40-minute intervals. Operators planned to deepen as soon as adequate tankage could be set. The companies have a 360-acre drilling block on which the well was drilled and control, either individually or jointly, approximately 1000 acres in addition.

Sun Oil Company will be the dominating major in the play, it appeared

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY--		
Lenoran Pet. Co., Delegowski 1, sw nw sw 22-4n-12w	*	1936
Regal Dutch Pet., Goodman 2, se nw nw 22-4n-13w	600	1595
Mich. Devonian, Huzinga 2, sw sw nw 22-4n-13w	568	1588
BAY COUNTY—		
Olympai Oil Co., Hossler 1, sw se ne 9-18n-3e	*	3086
Gulf, Marston 1, se sw ne 1-14n-4e..	15	2933
CASS COUNTY—		
Wayne Oil Co., Gebhard 1, ne se se 34-5s-15w	*	1276
GLADWIN COUNTY—		
Sun, Strohkirch 8, sw se sw 3-18n-1w	40	3653
Strohkirch 9, se sw sw 3-18n-1w..	35	3651
Card 6, nw sw nw 10-18n-1w....	90	3552
Rex Oil Co., Woodring 3, se sw se 23-18n-1w	60	3598
ISABELLA COUNTY—		
Pure, Wille 10, ne ne nw 4-14n-6w.	*	3800
Arthur Morris, Lawler 1, nw sw nw 20-15n-3w	45	3666
MASON COUNTY—		
Fountain Oil Co., Somerfelt 1, nw sw sw 36-19n-16w	*	1800
ROSCOMMON COUNTY—		
Maynard Smith's Eggleston 1, c nw nw 32-21n-2w	*	4246
SAGINAW COUNTY—		
Weber Oil Co., Uebler 1, sw se nw 9-11n-6e	*	3046

*Failures; †Junked; ¶Million cu. ft. gas.

this week. This company has played the so-called Edenville trend for several years and carries the bulk of acreage. Mammoth Producing & Refining Company in its customary procedure of moving fast when new areas are opened, snapped up the 40-acre offset for a reported $10,000 cash price and a sliding scale over-ride, three hours after the well started to flow and the following day started to build road for the offset.

Present interest in the test indicates that spring will see a major development program under way, unless price conditions prove a stumbling block.

One of the interesting features of the wildcat strike is in two of the individuals who played a leading role in getting the block assembled and eventually drilled. Guy E. Chapman, president of Chapman Oil Company, came into Michigan six years ago from the Southwest as geologist for McClanahan Oil Company, setting up his own company only in the past two years. Robert E. Newcombe, resident geologist for Associated Petroleum Company, is one of the leading authorities on Michigan geology. His writings, as assistant state geologist, a position which he resigned two years ago, comprise the bulwark of writings on Michigan geological datum.

Road Conditions Delay

Road conditions may delay for several weeks or months any big play in the district. Good roads are within five miles of the well, but much of the area is virtually inaccessible.

Pure Transportation Company's 6-inch Buckeye-Mt. Pleasant pipe line is within three miles of the well and Simrall Pipe Line Corporation's Buckeye-Mt. Pleasant line is 12 miles. The nearest railroad is the Pere Marquette running from Saginaw to Midland and Coleman, the latter being 8 miles west. With supply stores in both Mt. Pleasant and Gladwin little difficulty should be experienced in getting good field service.

Five miles north of the new strike, Sun Oil Company is till testing the State B-1, Section 5-16n-1w, which showed about 400 feet of oil natural at 3903 feet (top Dundee 3803 feet, 20 feet lower than Chapman well) but so far has not been established commercial, following successive acidization and nitro shooting.

Gulf Oil Corporation completed Marston 1, SE SW NE 1-14n-4e, Monitor township, Bay County, for 15 barrels on the pump following acid treatment. This wildcat is on a big block just off the west shore of Saginaw Bay. So far operators have not announced immediate development plans, however, it is probable that considerable drilling will be carried out this year. The Bay well is producing from 2933 feet in Dundee lime.

Muskogee, Okla.—Beginning at 10:00 a.m., February 10, oil and gas mining leases totaling 6,455.85 acres of restricted, allotted Indian lands will be offered for sale at public auction here, according to an announcement by A. M. Landman, superintendent for the Five Civilized Tribes. The 100 tracts are located in 22 counties. One coal and asphalt mining lease in Latimer County, is being offered.

CALIFORNIA

FRESNO COUNTY

CLOVIS—Central Valley Oil Co.'s No. 1, 1-12-30, dr shale 550 ft.

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr shale 3615 ft.

PANOCHE—J. C. Gautier's Hubbard 1, 12-14-11, sd 510 ft.

COALINGA—F. C. Grimes' No. 1, 12-20-15, sd 515 ft. Shell Oil Co.'s 1-36, sec. 36-19-14, rur.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, dr shale 5862 ft.

GUIJARRAL HILLS—Petroleum Securities Co.'s Gatchell 2, 18-20-16, dr shale 4876 ft. Pure Oil Co.'s S. P. 1, 31-18-17, dr shale 10,393 ft.

CIERVO—Superior Oil Co.'s No. 1, 20-16-13, dr shale 3360 ft.

TRANQUILITY—Union Oil Co.'s Nicholson 1, 17-15-15, dr shale streaks sand 6875 ft.

CANTUA CREEK—Western Gulf Oil Co.'s S. P. Land 4, 3-17-15, dr sand 6675 ft.

KERN COUNTY

DEVIL'S DEN—Amerada Pet. Corp.'s Beer 5, 22-26-19, fsg, brown shale and sand, 6719 ft. Den Pet. Co.'s Bates 1, 20-25-19, sd 4716 ft. Little Major Oil Co.'s Jester 1, 36-25-18, sd 140 ft. Gibson Oil Co.'s Alferitz 3, 14-25-18, lcn.

CUYAMA VALLEY—Calif. Prod. Co.'s Job 1, 6-10-34, dr shale 1127 ft.

FRUITVALE—Calif. Western Oil Co.'s K. C. L. 1, 14-29-27, bailing mud 3562 ft. Shell Oil Co.'s No. A-58, 29-29-27, dr sd 1120 ft, spud Jan. 20.

BELRIDGE—Chico-Martinez Oil Co.'s Exeter 1, 1-29-20, dr shale sand 1030 ft. General Pet. Corp.'s St. Helens 1, 12-28-20, dr shale 6732 ft. Ohio Oil Co.'s Ford 1, 6-29-22, sd 2027 ft. Wallace Taylor 1, 12-29-21, rur.

WASCO—Continental Oil Co.'s K. C. L. A-2, 8-27-24, dr shale 12,879 ft. Seaboard Oil-Tide Water Associated's K. C. L. C-1, 26-27-24, sd 10,213 ft.

ROSEDALE—Continental Oil Co.'s K. C. L. D-1, 10-30-26, dr sd 1002 ft, spud Jan. 26.

ARVIN—General Pet. Corp.'s Pauley 1, 22-31-29, sd 500 ft. Petrex Inc.'s No. 1, 32-31-30, sd 3150 ft. Union Oil Co.'s Berry 1, 16-31-29, rig.

McVAN—Golden Bear Oil Co.'s Siemon 3, 10-27-27, dr sd 720 ft, spud Jan. 23.

GRAPEVINE—Honolulu Oil Corp.'s Honolulu-Associated 33-1, 33-12-19, dr shale 7240 ft. Petrol Corp.'s Reserve-Petrol 32-2, 32-11-19, dr shale 4891 ft. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, dr gray sand 4848 ft.

MOUNT POSO—Ring Oil Co's K. C. L. 1, 16-26-28, rur.

CALIENTE CREEK—Geo. W. Johnson's No. 1, 33-29-30, sd 960 ft.

McKITTRICK—Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, sd 2150 ft. Rocima Oil Co.'s No. 1, 20-30-22, shale 3186 ft. pb to test.

ROUND MOUNTAIN—Richfield Oil Corp.'s Olcese 1, 17-28-29, fsg 1591 ft. Shell Oil Co.'s Olcese Lilly 2, 21-28-29, td 1905 ft. plug 1597 ft. pmpg. 150 bbls.

KERN FRONT—A. J. Rubenstein's Lillian-Kelly 2 (formerly Deep Zone Oil Co.) 20-28-27, spud 1/7, dr shale, 3350 ft. Vernon & Wheeden's Robinson 1, 28-28-27, sd 2540 ft.

McFARLAND—Shell Oil Co.'s Keystone 1, 4-26-27, abd. granite 3748 ft.

STRAND—Shell Oil Co.'s K.C.L. A-72, 14-30-25, td 8036 ft, redr. 7360 ft.

SAN EMIDIO—Shell Oil Co.'s No. 4-26, 26-11-22, dr gray sand 6540 ft.

SEMITROPIC—Standard's Randolph Com. 2, 14-27-23, dr sand and shale 9275 ft.

GREELEY—Superior Oil Co.'s K. C. L. 9, 3-30-26, td 7870 ft. redr. 3300 ft.

SOUTH MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr sand 6735 ft.

GLENN COUNTY—Ohio Oil Co.'s Willard 1, 18-20-2, td 4505 ft., blowing gas and water. Ohio Oil Co.'s Willard 1-A, 18-20-2, rur, directional hole to kill No. 1.

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft. gas well, plug 5737 ft, shut in.

KING COUNTY—C. C. Friend's No. 1, 17-22-19, sd 100 ft. Pyramid Prod. Co.'s Retherford 1, 27-24-18, dr shale 1675 ft.

MERCED COUNTY—Amerada Pet. Corp.'s Carano 1, 19-10-11, dr shale and sand 8319 ft.

SAN JOAQUIN COUNTY—Standard's Weil-¼ukerman 2, 25-2-4, dr gray sand 7862 ft.

SAN MATEO COUNTY—Bergman Oil Co.'s No. 1 (Half Moon Bay) 10-6-5, lcn. Willsh're Oil Co.'s Cowell 1, (Half Moon Bay) 20-6-5, dr shale 7062 ft.

SOLANO COUNTY—Amerada Pet. Corp.'s Detering 1, 36-4-2, td 4457 ft, plug 4038 ft, si, no test; McCormack 1, 1-3-2, dr shale 3500 ft, spud 1/21.

TULARE COUNTY—Crusader Oil Co.'s No. 1, 1-24-27, rur. Magnet Oil Co.'s A.O.G. 3, 29-24-24, sd 7555 ft. Standard's Morris 1, 36-24-23, td 11,440 ft. junked and abn.

SANTA BARBARA COUNTY—Ben Moyle's Arrata 1, 9-8-32, sd 3286 ft.

MONTEREY COUNTY—Elba Oil Co.'s Elba 1, 6-12-1, co to 4021 ft; Elba 2, rig.

SAN LUIS OBISPO COUNTY—Ajax Pet. Co.'s No. 1, 27-26-13, setting boilers. Cholame Syn's Jack 2, 10-25-15, sd 3641 ft. Vanguard Oil Co.'s (Shandon) Clark 1, 26-27-24, dr shale 4360 ft.

SANTA BARBARA COUNTY—E. C. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft. co. Carpinteria Oil Co.'s No. 1, 34-4-2, rur. O. C. Field's Santa Rita 1, 11-7-33, td 3358 ft, co. Pima Oil Co.'s Marganti 1, 13-9-35, shale 1782 ft, 8⅝-inch cmt. 1549 ft. Standard's Los Flores Land 1, 27-9-33, dr shale 4036 ft. A. E. Tweedy's No. 1, 34-5-31, sd 1690 ft. United Western Oil Co.'s No. 1, 16-7-30, sd 2830 ft. Wilshire Oil Co.'s Hollister 1, 35-5-33, dr shale 600 ft.

VENTURA COUNTY—Joint Test, General Pet., Honolulu, Richfield, Shell, Standard and Texas Co., No. 1, 15-1-22, sd 3692 ft. Oxnard Oil Co.'s Vanoni 1 (Oxnard) 10-1-22, sd 6302 ft, plug 6200 ft. Richfield Oil Corp.'s McFarland 1, (Camarillo) 13-2-21, sd 7883 ft. Texas Co.'s Rancho Santa Clara 1, (Camarillo area) shale 6111 ft. pb. Vaca Oil Explor. Co.'s Lennox 1 (Oxnard) 6-1-21, td 2885 ft, pumping 275 bbls. 11 gravity clean oil.

SOUTHERN CALIFORNIA

WILMINGTON AREA—Alford Dev. Co.'s Class. Yards 3, 22-4-13, sd 6385 ft, may abn.

PALMDALE—Antelope Valley Pet. Co.'s No. 1, 17-6-12, rur.

NEWHALL—Barnsdall Oil Co., Rancho San Francisco 2, 26-4-17, o.s. 6712 ft, will set casing. Towsley Canyon Oil Co.'s Hammond 1, 8-3-16, td 4220 ft, co to 4050 ft, cemented 6⅝ inch casg 4000 ft. West Coast Dev. Corp.'s Newhall Land 1, 27-4-16, sd 1438 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, sd 2550 ft.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, sd 5502 ft.

TICK CANYON—Mint Canyon Pet. Co.'s Jennings 1, 35-5-14, sd 734 ft.

MONTEREY PARK—W. E. Ramsey et al's Garvey 1, 27-1-12, sd 3507 ft.

PALOS VERDES HILLS—Rolling Hills Pet. Co.'s Palos Verdes 1, 27-4-14, dr shale 3604 ft.

CASTAIC—Royal Land Corp.'s Ramona Hills 1, 8-4-17, td 330 ft, hole caving.

GARDENA—Texas Co.'s Gardena Com. 5-1, 30-3-13, dr sandy shale 6910 ft.

SAN BERNARDINO COUNTY — Selegna Dr. & Prod. Co.'s Abacherli 3, 12-3-8, (Chino), dr shale, streaks sand 2551 ft.

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, elev 120 ft, owdd, td 7520 ft.

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, sd 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, sd 4975 ft.

MOBILE COUNTY — Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, mim. J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, sd for 8-in csg 1100 ft (1100 ft s of No. 1).

ARKANSAS

CLAY COUNTY—Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatosh 800 ft, sd 1005 ft shale.

CRITTENDEN COUNTY—Manning & Martin, Inc.'s Cartwright 1, se nw sw 16-7n-8e, dr 4230 ft, sand and shale.

COLUMBIA COUNTY—Kerrlyn Oil Co.'s Barnett 1, se sw ne 14-17-20, elev 321 ft, top Permian lime 7618 ft, cored lime sulphur odor 7630-39 ft, cored lime 7648-49 ft, taste of gas, hung drill pipe, unlodging, td 7649 ft. Standard of La.'s Bodcaw Lbr. Co. 1, c se ne 18-16-22, spd woc surf csg. D. E. Thomas 1, c nw se 8-16-22, mim.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sd high water, td 2944 ft.

LA FAYETTE COUNTY (Buckner)—Lyons & Neely's Lillian Taubel 1, (Tatum fee), c se nw 18-16-22, top first anhydrite 3279 ft, top massive anhydrite 3298 ft, dr 4945 ft shale and lime. L. E. Tennyson, Jr.'s Fee 1, sec nw ne ne 13-16-23, lcn.

LITTLE RIVER COUNTY—Henan & Coe's W. D. Waldrop 1, woc 10-in surf csg. J. G. Strahan et al's Dierks Lbr. Co. 1, sw se 21-12-28, dr 2032 ft, lime and shale.

MILLER COUNTY—F. F. Earles' General American 1, sec sw 20-14-26, rur.

OUACHITA COUNTY—A. H. Tarver et al's Dean 1, c nw sw se 16-14-19, pb to 1332 ft, sw, abn old td 2225 ft. Mrs. Guy Smith 1, se ne sw 16-14-19, rur.

ILLINOIS

BOND COUNTY—Universal Wells Serv. Co. et al's Molder 1, nw nw nw 24-6n-4w, sd 2045 ft. A. T. Whitehead et al's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft. W. C. McBride's Butler 1, nw sw se 30-4n-2w, dr 800 ft. C. R. Gigall et al's Neillson 1, ne ne nw 32-5n-4w, lcn.

CLAY COUNTY—Shelby O&G Co.'s Knodacker 1, nw se sw 23-3n-7e, sd 2933 ft. J. E. Milburn's Striegle 1, se nw ne 19-3n-8e, dk. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Olson Drlg. Co.'s Irwin Est. 1, cn½ se nw 12-2n-7e, wo pipe line. J. V. Wicklund's McCauley 1-A, ne sw nw 7-2n-9e, der. Campbell et al's Walter Henderson 1, cn½ ne ne 7-4n-7e, c&p. Carter's Cox 1, ce½ se sw 14-4n-5e, der. Bonnie Oil Co.'s Walker 1, se se nw 21-4n-8e, mim. Milburn's Levi Striegle 1, se nw ne 19-3n-8e, dk.

CLINTON COUNTY—R. E. Dalton's Clifton 1, ne sw sw 15-1n-4w, dr 1300 ft. Ellzy et al's Williams 1, sw nw sw 1-3n-1w, dk. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, fsg 1350 ft. Watkins & Wright's William Wise 1, nw nw se 24-1n-3w, mim. Phelps et al's Gubser 1, cw½ w½ nw 4-3n-2w, reaming to 1037 ft. Holley & Willis' Hughes 1, cn¼ ne nw 18-3n-2w, dr 470 ft. Noll & Max Conrey's Chas. Barth 1, nw se sw 12-1n-1w, dr 1185 ft. Gross et al's Eversgerd 1, sw nw sw 22-1n-4w, dr 950 ft. Adams O&G Co.'s Heirs 1, se se ne 13-1n-1w, fsg cones 1068 ft. Lilly et al's Ed Siegler 1, nw ne ne se 12-1n-1w, ru mach. Brookside Oil Co.'s No. 1, sw sw nw 21-1n-1w, mim.

COLES COUNTY — W. J. Miller et al's Tomberlin 1, se se se 21-11n-10e, sd. Hughes' Swango 1, csw ne 27-13n-9e, sd 903 ft. Stipes et al's Millage 1, cnl ne se 5-11n-10e, sd.

CUMBERLAND COUNTY—Jolly-Hill-Stipes et al's Jenkins 1, se ne ne 30-10n-9e, td 2130 ft. Chas. Kapschuell's Oakley 1, sw ne sw 34-10n-8e, mim.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY — Kingwood and Carter's Bartel 1, ce½ ne nw 26-6n-5e, td 4102 ft, testing. Samuel Hollis et al's Haarman 1, nw se sw 32-8n-6e, dr 2685 ft. Kingwood et al's McWhorter 1, ce½ se nw 15-6n-6e, dk. Graham-Duncan's E. Richers 1, cn¼ se nw 18-6n-7e, lcn.

FAYETTE COUNTY — Carter's Miller 1, cw½ nw nw 12-8n-3e, td 3170 ft, to pb. John Farrely's Lilly 1, se sw se 16-8n-3e, ur 8-in csg 1130 ft. Wilson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. W. B. Greer's Metzger 1, cn½ ne nw 19-5n-2e, sd. Ryan & Redgraves' Jones 1, cs½ ne 24-9n-1e, woc 1188 ft.

FRANKLIN COUNTY—Robert Markham's Whittington 1, ce½ sw se 18-5s-3e, sd 2939 ft. Washburn Pet. Corp.'s Neil 1, ce½ se se 6-5s-4e, dr 2100 ft, hfw. Max Conrey et al's Rea 1, ne ne nw 18-5s-2e, sd.

GREENE COUNTY—M. V. Yeager's Robinson 1, se sw nw 17-10n-11w, dr 2160 ft.

JACKSON COUNTY—Stanolind's Leiner 1, se se nw 20-7s-4w, dr 1750 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
b.s.—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

JASPER COUNTY—C. R. Obermeyer's Atkins 1, nw nw ne 3-6n-9e, sd for fuel oil. Siosi Oil Corp.'s King 1 (was Hoffman et al), sw nw nw 20-8n-10e, coring 4031 ft.

JEFFERSON COUNTY—Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, rur. Nollen & Benoist's Kelley 1, ne nw ne 25-4s-2e, ur 6-in csg. E. L. Dee's Hamilton 1, ne sw nw 20-4s-3e, td 2911 ft, may skid rig. Sturbois & Tomberlin's J. B. Morris 1, nw nw sw 6-2s-2e, dk. Benedum & Trees' Arthur Owen 1, nw se sw 23-4s-3e, dr 3150 ft. Myers Bros.' Duckworth 1, ce½ sw ne 33-4s-4e, rig. A. H. Carpenter et al's Skinner 1, sw nw ne 36-4s-2e, brr. E. L. Dee & Folts' Hamilton 2, sw sw nw 20-4s-3e, rog.

MARION COUNTY—Siegel & Schlosberg's Roddy 1, sw se sw 20-2n-3e, sd 2182 ft. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, dr 1475 ft. Hackman & Harris' Britt 1, nw nw nw 36-4n-1e, sd 1050 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, to dd to 2833 ft and acidize. W. C. McBride's Clow 1, sw sw se 29-2n-1e, ur 8-in csg 1605 ft. Helmerich & Payne's Stephens 1, sw sw sw 35-3n-4e, dr 2123 ft. R. E. Dalton's Ira Dalton 1, nw se ne 19-1n-3e, dk. Oil Royalties Limiteds' Suggs 1, csw nw nw 11-2n-1e, mim. H. E. Coyer's Mulvaney 1, se ne se 6-2n-4e, mim.

MASSAC COUNTY—Kahle et al's Harvick 1, sw sw sw 23-14s-3e, dr 2850 ft.

RANDOLPH COUNTY—W. A. Delaney & J. E. Mabee's Wilson 1, ce¼ se ne 3-4s-5w, dr 3320 ft. Pioneer O&G Co.'s Hohnie 1, se nw nw 28-6s-6w, sd 567 ft. Bremen O&G Co.'s Wilson 1, se se se 22-6s-6w, lcn.

RICHLAND COUNTY — Mammoth P&R Co.'s McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, dk. Parker et al's Berry 1, se sw ne 22-2n-14w, sd. Papoose Oil Co.'s Lynch 1, cne nw ne 5-3n-10e, dr 2410 ft. Bur-Kan Oil Co.'s Allen 1, csw nw 27-4n-10e, td 3045 ft, to acidize. Miller & Ake's Schlichenmeyer 1, cne sw se 16-3n-10e, lcn. Trio Oil Co.'s Trueblood 1, sw sw sw 14-3n-11w, ru mach. American Exploration Co.'s Johnson 1, cnw ne nw 29-4n-9e, dk. Gulf's Hill 1, cn¼ sw nw 2-4n-10e, mim.

SALINE COUNTY — Will Rogers et al's Saylor 1, se se se 3-10s-6e, sd 1125 ft. C. F. Bolton's Beagle 1, nw nw ne 13-9s-7e, sd 1500 ft.

SCOTT COUNTY—Gregory & Mechling et al's Foltz 1, nw sw ne 31-14n-14w, sd 1196 ft.

SHELBY COUNTY—E. Breaseale et al's Richardson 1, cnw nw 35-12n-14w, sd 198 ft. Ray Farrior's Fritz 1, ne ne ne 1-12n-2e, lcn.

WABASH COUNTY—Martin et al's W. R. Wood 1, ne se nw 31-1n-12w, ur 8-in csg 1830 ft. Price et al's Zimmerman 1, cs½ se sw 4-1s-12w, abd 1525 ft.

WARDS COUNTY—Dr. W. F. Schmidt's Strenne 1, ne nw ne 5-1n-14w, sd. Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr 2980 ft. Harry Cotton's Leibke 1, ne ne sw 20-1n-14w, c&p. Cotton & Laller's Hays 1, ne ne ne 4-1n-10e, lcn.

WASHINGTON COUNTY—Silvers et al's Paul 1, nw nw se 29-3s-5w, sd. Bitterman et al's Jesse 1, cse ne 16-3s-2w, ru mach.

WAYNE COUNTY—Gordon et al's Taylor 1, cnw sw sw 15-1n-7e, mim. Texas Co.'s Silverman 1, ce½ sw nw 16-3s-7e, flow 86 bbls oil, 2½ hrs, wo pipe line connections. Kenova Pet. Corp.'s Bright 1, ne ne ne 21-1n-5e, sd. Morrison's Gibbs 1, nw nw nw ne 14-1n-9e, mim.

WHITE COUNTY—Heldt et al's C. B. Dagley 1, sw ne sw 12-7s-9e, c&p. H. C. Hunt et al's Smith 1, 11-5s-8e, mirt.

WILLIAMSON COUNTY—Edward C. Snyder's Flemming 1, cse ne 9-10s-2e, mim.

KANSAS

BARBER COUNTY — Palmer Oil Corp.'s Warwick 1, c nw 29-31s-10w, rur. Kansan Oil Corp.'s Mease 1, ne se se 27-30s-11w, sd 4910 ft. Helmerich & Payne's Winter 1, nw nw sw 16-32s-10w, abd 5125 ft. Carter's Lytle 1, c ne nw 6-32s-14w, brr.

BARTON COUNTY—C. L. Price's Hammeke 1, ne ne sw 12-18s-12w, td 3427 ft, 2700 ft oih. Martin & Foraker's Dick 1, ne sw sw 31-19s-11w, mim & sd. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Ash's Frees 1, nw nw nw 34-16s-11w, abd 3444 ft. Day's Feltes 1, se se ne 14-16s-12w, sd 1875 ft. Thayer & Brouk's Soderstrom 1, se se nw 21-17s-13w, td 3267 ft, Pot. 1065 bbls oil, comp. Sinclair Prairie's Oeser 1, ne ne se 17-16s-11w, fsg 3219 ft. Texas' Lowry 1, c nl nw sw 2-17s-13w, dr 730 ft. Murfin's Rexroot 1, nw nw se 14-17s-13w, lcn. Crown Pet.'s Schartz 1, sw se nw 7-20s-11w, lcn.

BUTLER COUNTY — Reeves & Kinnan's Heim 1, sw sw sw 5-29s-3w, abd 4330 ft. Steinbuchel's Fox 1, nw se ne 25-26s-3e, sd 1010 ft. Dustin's Miley 1, se nw ne 17-27s-5e, sd 395 ft.

CHASE COUNTY—Duffy's Leedy 1, ne nw nw 26-22s-9e, dr 1035 ft.

CHAUTAUQUA COUNTY — Harrison's Brown 1, ne se ne 19-34s-10e, sd 820 ft. Siegle's Temple 1, sw sw sw 31-32s-12e, sd 400 ft. Sooby's Davis 1, sw ne nw 29-33s-10e, sd 1504 ft.

CLARK COUNTY—Olson Oil Co.'s Lehman 1, se se sw 2-32s-21w, dr 6202 ft. Olson's Watkins 1, sw sw nw 23-32s-21w, run 7-in csg 6800 ft.

COWLEY COUNTY—Wakefield's Whitson 1, sw ne se 8-32s-4e, p. 65 bbls oil & est. 100 bbls wtr, 12 hrs. Dickey's Kansas G&E Co. 1, ne ne ne 22-34s-3e, fsg 3322 ft. Trees & Talbott's McMinn 1, ne ne nw 16-31s-6e, dr 1620 ft. Arthur Brewer's McDaniels 1, sw sw sw 24-30s-4e, cel. Palmer's Neimiller 1, ne ne ne 14-30s-4e, dr 510 ft. Brewer's Clark 1, ne se nw 6-31s-4e, rng 12-in csg at 960 ft. Wakefield's White 1, nw nw ne 4-33s-4e, rig.

ELLIS COUNTY—Reynolds' Karlin 1, nw nw nw 13-12s-18w, swabbing. Skiles' Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Glimac's Richards 1, se sw nw 5-11s-18w, 941 bbls oil, comp. Duwe & Ferris' Hadley 1, se ne se 12-11s-18w, dr 2661 ft. Bradley's Jensen 1, nw nw se 36-

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ELLSWORTH COUNTY—Colonial's Hogy 1, nw nw sw 16-16s-10w, dr 2680 ft. Wixon's Peterman 1, sw sw sw 28-17s-10w, co 2295 ft. Cities Service' Schroeder 1, c nl nw 29-17s-9w, td 3215 ft, 3150 ft oih 10¾ hrs.

FINNEY COUNTY—Atlantic's Nunn 1, se se ne 27-21s-34w, lcn.

GRAHAM COUNTY—Continental and Cities Service's Trexler 1, c el w½ ne 15-9s-21w, lcn.

GRAY COUNTY—Reynolds' Watkins 1, c sw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, c el se nw 8-26s-13e, td 1504 ft, rng 5-in csg. Nichols' Central Life Ins. Co. 1, sw sw se 35-25s-12e, spd, sd.

HARPER COUNTY—Franklin Drlg's Walts 1, ne ne sw 24-34s-6w, dr 1603 ft.

HARVEY COUNTY—Nat'l Ref. Co.'s Brown Bros. 1, nw se ne 22-23s-2w, set 8-in csg 2785 ft.

JACKSON COUNTY—Lemmick Oil Co.'s Marble Savings Bank 1, c ne ne 26-9s-14e, sd 510 ft.

JEWELL COUNTY—Hollingsworth Bros.' Wolfe 1, nw sw se 14-4s-8w, spd, sd.

LANE COUNTY—Phillips' Kees 1, c se se 3-19s-30w, dr 4256 ft.

McPHERSON COUNTY—Pulse's Boesker 1, se se nw 29-20s-1w, rig. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, abd 3495 ft. Carter's Hoglund 1, c w½ sw nw 8-17s-3w, testing. Phillips' Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, fsg 2225 ft.

MEADE COUNTY—Pacific Mid-West's Rexford 1, ne se sw 8-30s-29w, sd 200 ft. Barnett's Adams 1, sw sw ne 22-34s-30w, rot rig.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, sd 3265 ft. Marshall's Anderson 1, sw sw nw 23-16s-24w, spd, sd. Trojan's Moses 1, c sw nw 10-18s-25w, sd 500 ft.

OTTAWA COUNTY—Babcock Oil Co.'s Copeman 1, c nw ne 18-10s-2w, pits.

PHILLIPS COUNTY—Davidson's Elliff 1, se ne ne 35-5s-18w, sd 600 ft.

PRATT COUNTY—Ohio's Howell 1, c sw sw 21-29s-15w, abd 4929 ft. Cities Service and Atlantic's Delaney 1, c sl ne 13-26s-12w, lcn.

RENO COUNTY—Schneider's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Carey's McPheeters 1, ne ne nw 22-26s-8w, ur 8-in csg 3208 ft. Witt's Fair 1, nw se se 4-22s-8w, td 3355 ft, to dd. Cohen's Teter 1, se se sw 3-23s-5w, ru, sd. McCole's Mathews 1, sw nw nw 15-24s-10w, dr 1520 ft. Skelly's Gorham 1, sw sw se 32-25s-10w, dr 3400 ft. Pulse's Payne 1, sw nw ne (otd 3440 ft) pb 3287 ft, ur 5-in csg 3380 ft. Cities Service's Kreie 1, c nw 27-23s-10w, rur.

RICE COUNTY—Skiles' Campbell 1, se se ne 28-19s-9w, P. 152 bbls oil, 20 hrs, testing. Aylward's Weihe 1, sw sw ne 23-18s-9w, abd 3360 ft. Price's Gemeinhardt 1, ne ne se 18-18s-10w, dr 2835 ft. Western Kansas' Bailey 1, sw sw nw 19-20s-6w, abd 3875 ft. Herndon's Froning 1, nw nw nw 15-18s-8w, surf. Schneider's Sterling College 1, se sw se 28-20s-8w, brr.

ROOKS COUNTY—Producer's Ham 1, sw sw nw 25-7s-19w, woc 330 ft. Graham's Fike 1, sw sw sw 9-9s-17w, fsg 3326 ft. Witt & Sheridan's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell's Zimmerman 1, ne ne nw 15-9s-18w, woc 345 ft. Colonial's Hancock 1, nw sw sw 21-10s-18w, rur.

RUSSELL COUNTY—Emrich's Anderson 1, ne se sw 33-15s-11w, spd, sd. Phil-Han's Reinhardt 1, se se sw 19-14s-14w, td 3246 ft, 933 bbls oil, comp. Shields' Rogg 1, nw nw sw 28-14s-13w, td 2922 ft, 1635 bbls oil, comp. Parks' Gorham Est. 1, sw nw ne 19-15s-15w, ru. Jones' Kuhnle 1, se se nw 4-15s-12w, cel. Hess' Reinhardt 1, ne ne sw 36-12s-14w, dr 1460 ft. Smith & Unruh's Stielow, nw nw nw 32-11s-14w, rig.

SEDGWICK COUNTY—Murfin's Martin 1, se se nw 18-28s-1e, swb 45 bbls oil, 24 hrs. Talbott's Downs Est. 1, se se nw 32-28s-2e, testing. Union's Howell 1, sw sw sw 6-29s-1e, sd 2400 ft. Hudson's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnabb's Garrett 1, se sw sw 18-29s-1e, dr 792 ft. Steinbuchel's McAdams 1, sw sw ne 28-29s-1e, ur 8-in csg 2873 ft.

STAFFORD COUNTY—Hipple's Moses 1, nw nw sw 9-22s-13w, pb to 3635 ft, perf 3624½-28 ft, SSO & wtr. Torry & Feaster's Heggy 1, ne ne sw 26-33s-11w, dr 3443 ft; Negley 1, sw sw ne 23-22s-12w, sd 3743 ft. Lindsay & Bailiere's Tiepermann 1, sw sw nw 31-22s-12w, dr 3663 ft. Cardinal & Carraker's Sittner 1, sw sw sw 4-22s-12w, Aw/300 gals. Carter's Andress 1, c nl se 2-21s-13w, dr 3035 ft. Shaffer's Newell 1, ne ne se 20-24s-11w, dr 3110 ft. Stanolind's Walker 1, ne ne sw 33-21s-12w, td 3625 ft, rust. Carlock's Gates 1, se sw ne 34-22s-11w, mim. Rust's Hullman 1, sw sw sw 5-22s-12w, dr 1585 ft. Knight's McNickle 1, se se ne 2-24s-11w, cel. Nat'l Ref.'s Bonham 1, sw sw se 28-25s-12w, cel.

SUMNER COUNTY—McKnabb's Blair 1, sw sw sw 7-30s-1e, td 3869 ft, 386 bbls oil, comp. Saco's Phipps 1, sw se ne 24-30s-1w, spd, sd. Jones' Stunkel 1, se se sw 2-30s-1w, rig. Shawver's Stewart 1, nw nw se 4-32s-3w, dr 1910 ft.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd, sd.

WOODSON COUNTY—Reeser's Weide 1, nw nw se 18-25s-14e, sd 1150 ft. London & Mendenhall's Slough 1, ne ne sw 9-24s-13e, ru mach.

SOUTH LOUISIANA

ACADIA PARISH — Humble's B. Finch 1, South Crowley area, 22-10s-1e, dr shale 3789 ft.

CALCASIEU PARISH — Shell's Calcasieu National Bank 1, Hayes area, 18-11s-5w, dr sandy shale 4687 ft.

CAMERON PARISH — Humble's Miami Corp. 1-B, Little Cheniere area, 7-14s-6w, ru. Superior's State 1, in Gulf of Mexico, 15s-8w, fsh 9318 ft.

IBERIA PARISH—Texas Co.'s Bayless & Jones 1, e flank of Jefferson Island dome, 58-12s-5e, building roads; same operator's State 4, Fausse Point, 35-11s-8e, dr shale 7239 ft; same operator's State 2-B, Vermilion Bay, 16s-5e, dr shale 6549 ft.

JEFFERSON DAVIS PARISH—Union Sulphur's Calcasieu National Bank 1, Woodlawn area, 12-9s-8w, testing 8388 ft.

LAFOURCHE PARISH—Amerada-L. L. & E.'s South Coast Corp. 1, Raceland area, 34-15s-19e, comp 733 bbls daily, 10,205 ft.

ST. BERNARD PARISH—Gulf's State RR 3, Lake Borgne area, 6-12s-15e, lcn.

ST. JAMES PARISH—Continental's Realty Operators 1, Hester prospect, 17-12s-5e, levee.

ST. MARTIN PARISH—Carter & Stewart et al's Martin 2, Section 28 dome, 32-9s-7e, dr shale 728 ft. Shell & Tide Water's Unit 1, w Lake Verret prospect, 11-14s-12e, dr shale 7680 ft. Texas Co.'s State 4, Lake Mongouloi area, 14-10s-9e, dr shale 6467 ft.

TERREBONNE PARISH—Fohs' Buckley 1, Dulac area, 77-19s-17e, sd 310 ft; same operator's State 1, La Terre area, 41-19s-19e, mim.

NORTH LOUISIANA

BIENVILLE PARISH—DeSoto O&G Co.'s Ashley 2, c sw se 15-16n-10w, ru and sd. Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, dr 7554 ft red and blue shale. Hunt-Seaboard's Hodge-Hunt Lbr. Co. 1, se nw 36-17n-6w, rur.

CADDO PARISH—A. D. Robinson et al's Dickson 1, 22-20n-14w, 5-3/13 in csg 2400 ft, tested sw in Tokio, trying to run electrical tester, td 2805 ft. lime. Olson Drlg. Co. et al's Sharp 1, c nw ne 10-18n-16w, woc surf csg.

CATAHOULA PARISH—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, woc 16-in csg 20 ft.

CLAIBORNE PARISH—Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, dr 9647 ft, black shale.

CONCORDIA PARISH—Edw. A. Addey's Pasternach 1, c nw sw 49-8n-9e, setting csg 480 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so, sd for csg, td 2694 ft. Kingston Oil Co.'s Scott 1, ne ne 32-14n-13w, pumping 20 bbls oil day, td 2778 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, dk.

FRANKLIN PARISH—Southern Star Pet. Corp.'s Grayson 2, sw ne 36-12n-6e, woc 148 ft.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, perf and tested Petitt lime 5932-41 ft, no show, acidized, test sg and distillate, shot csg 5932-41 ft, tested no show, sd, td 6260 ft, Travis Peak shale with slickensides.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, c ne ne 3-15n-11e, mim.

MOREHOUSE PARISH—W. J. Furlong, Jr. et al's E. M. Clark 1, 10-20n-7e, elev 103 ft, arr set csg and dd to Permian lime, td 6020 ft (lower Marine).

NATCHITOCHES PARISH — Joseph E. Popkins' Peavy-Wilson Lbr. Co. 1, nwc 36-7n-9w, dk.

RED RIVER PARISH—Ark. Fuel Oil Co.'s Franklin Realty Co. 1, c ne nw 20-11n-9w, top anhydrite 4960 ft, sw abn, td 7155 ft.

SABINE PARISH—J. C. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, woc 9⅝ in csg 2132 ft (10,000 ft test).

TENSAS PARISH—H. M. Jones' Chicago Mill & Lbr. Co. 2, c ne sw 31-12n-10e, coring 776 ft.

UNION PARISH—Joe Modisett et al's Frost 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, 9⅝ in csg 4358 ft, top lower Marine 6161 ft, sd 7010 ft, arr deepen to 9100 ft.

WEBSTER PARISH—Magnolia's Sexton 1,

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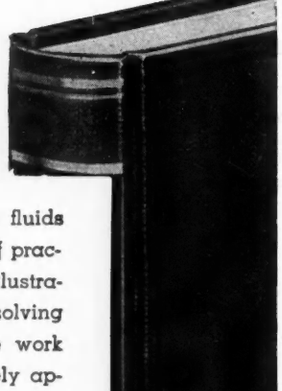

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c sw ne 32-23n-9w, elev 225 ft 13⅜ in csg 838 ft, top first anhydrite stringer 4175 ft, top massive anhydrite 4348 ft, dr 6727 ft. Lunsford & Ferguson's Turner 1, 20-20n-8w, sd 1820 ft.

WINN PARISH—G. W. Zeigen's La. Cent. Lbr. Co. 13, 4-13n-1e, rur.

MICHIGAN

ALLEGAN COUNTY—Frank Vahue's Chadbourn 1, 28-2n-13w, sd 1460 ft. Eureka Dev. Co.'s Widenfeller 1, 29-4n-12w, dr 160 ft. Huges Heimig's Lundburg 1, 29-3n-14w, dr 1335 ft. Adrian Stellard's Schafer 1, 29-3n-12w, fsg 996 ft. S. B. Hood's Wright 1, 9-3n-13w, dr 1500 ft. Fletche Carcalen's Van Dam 1, 3-4n-14w, sd 1373 ft.

ARENAC COUNTY—Sterling Drilling Co.'s Kline 1, 19-19n-4e, dr 2100 ft. R. B. Tamblyn's McFarlan 1, 34-20n-3e, mim. D. F. Jones' Sibley 1, 33-20n-7e, sd 2400 ft.

BARRY COUNTY—Collin & Soper's Simmons 1, 3-4n-10w, dr 110 ft.

CLARE COUNTY—Gulf Ref. Co.'s Citizens Bank 1, 36-17n-4w, dr 450 ft. Big Basin Oil Co.'s Murphey 1, 26-17n-3w, dr 500 ft.

GLADWIN COUNTY—W. E. Ross, Trustee's Kinyon 1, 18-18n-2e, sd 1935 ft. Rex Oil Co.'s Auer 1, 22-18n-2e, dr 2800 ft. Daily Crude Oil Co.'s Caplan 1, 10-19n-1e, Dundee 3416, water 3514 ft. Franklin Pet. Co.'s State 1, 8-19n-2e, rig.

GRATIOT COUNTY—Red-Man Oil Co.'s Martin 1, 26-10n-3w, Dundee 3145 ft, sd 3174 ft.

IONIA COUNTY—Rex Oil Co.'s Marion 1, 11-8n-5w, csd 5-in 2990 ft.

ISABELLA COUNTY—J. V. Wicklund Dev. Co.'s Lawens 4, 24-15n-5w, skidding rig, lost hole 450 ft. J. G. Zabel's Kennedy 1, 25-14n-4w, r 1000-1486 ft.

LAKE COUNTY—Cherry Valley Oil Co.'s Rice 1, 25-5n-12w, dr Traverse lime 2960 ft.

KENT COUNTY — Hirzel-Leland's Oudermeulen 1, 29-5n-12w, csg 5-in 1990 ft.

MECOSTA COUNTY—Sun Oil Co.'s Robart 1, 29-16n-7w, dr 2800 ft. Jetter Drlg. Co.'s Deakins 1, 28-13n-7w, sd 200 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B1, 5-16n-1w, co after shot, td 3903 ft. Chapman Oil Co.'s State 1, 27-16n-1w, Dundee 3739 ft, so 3753 ft, csd 5-in 3753 ft, flowed 385 bbls oil 18 hrs, 3590-92 ft, sd 3592 ft for tanks. Mammoth Pro. & Ref. Co.'s Rickert 1, section 27-16n-1w, mim. Wicklund Dev. Co.'s Land Co. 3, 24-16n-2w, dr 60 ft. C. W. Teater's Tushingham 1, 26-16n-2w, sd 1376 ft.

MONTCALM COUNTY—Smith Pet. Co.'s William 1, 17-11n-7w, dr 400 ft. Socony-Vacuum Oil Co.'s Hansen 1, 22-12n-6w, dr 1100 ft.

NEWAYGO COUNTY — Midstate Corp.'s Eichenberger 1, 7-16n-11w, dr 4250 ft.

OTSEGO COUNTY—Barton & William's Yuill 1, 9-32n-3w, dr 1150 ft.

WEXFORD COUNTY—G. H. Schrack's Fee 1, 17-22n-9w, dr 1900 ft.

MISSISSIPPI

CALHOUN COUNTY—Ed Spencer's J. C. Conner 1, se ne 12-24n-8e, sd 1400 ft.

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, elev 199 ft, arr deepen, td 1455 ft.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, rur to deepen, td 50 ft.

HINDS COUNTY — Cleve Love et al's Montgomery 1, sw se se 28-6n-4w, lcn. S. F. Johnson 1, ne se 10-in csg 93 ft, cur titles. Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5e, elev 146 ft, dr 6587 ft basal Midway.

LAMAR COUNTY — Southern Miss. Pet. Corp.'s Morris 1, nw se 4-2n-14w, arr deepen 50 ft. Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, elev 374 ft, dr 8330 ft bro lime and red shale.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, elev 210 ft, sd 6616 ft repr rig.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, se sw 33-2n-4e, dr 1503 ft.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boylee 1, nw nw 33-25n-7e, elev 285 ft, arr run formation tester in Midway, depth not given.

OKLAHOMA

ADAIR COUNTY—B. L. Maddoxs' Penn Mutual 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY — C. M. Sheldon and Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, dr 2200 ft. Stanolind-Amerada's Ridgway 1, nw ne ne 24-3s-9e, bldg rig. Turner et al's Collins 1-A, sw ne ne 18-4s-10e, dk.

BECKHAM COUNTY — Mid-American Oil Co.'s Biscoe 1-A, sw sw sw 28-8n-22w, dr 2631 ft.

BRYAN COUNTY—Southern Oil Co.'s Henry 1, cnw ne 10-8s-7e, dr 2040 ft.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, td 6900 ft, sd.

CARTER COUNTY—Lloyd & Noble's Revelle 1, sw sw se 21-3s-2w, td 4028 ft, sd.

CLEVELAND COUNTY — Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, dr 7304 ft. H. R. Hollenback et al's Mantooth 1, nw nw nw 24-6n-1e, rig. W. A. Delaney et al's Bugher 1, se se sw 12-7n-2w, sd.

CHOCTAW COUNTY—V. K. Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, fsg 340 ft. J. A. True's Boby 1, nw se nw nw 17-7s-19e, sd 2044 ft.

COAL COUNTY—Carter et al's Claytor 1, cw½ ne sw 27-2n-9e, testing.

COMANCHE COUNTY—J. W. Wolf's Costinus 1, sw sw se 30-4n-11w, spd. Frank Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft. Clyde Roach' Green 1-A, se se sw 2-1n-13w, sd 340 ft.

COTTON COUNTY—Bowers & Wise' Pendergraft 1, nw se sw 4-4s-12w, sd.

CREEK COUNTY—M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, dr out to 3018 ft, 2000 ft wih, sd.

GARFIELD COUNTY—H. R. Hollenback et al's Clark 1, nw nw nw 34-21n-6w, testing 7320 ft.

GARVIN COUNTY—B. C. D. Edwards' Clark 1, ne ne ne 16-3n-3e, td 2676 ft, rust.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 10,060 ft. Doyle Pet. Co.'s Huffine 1, nw nw se 30-5n-8w, der.

GRANT COUNTY—Magnolia's Reynolds 1, ne ne se 19-25n-5w, dr 6135 ft.

GREER COUNTY—J. I. Medlin et al's Broudie 1, nw nw nw 5-6n-20w, sd 90 ft. R. W. McDonald's Fite 1, se se nw 34-7n-21w, ur 8¼ in csg. Gauntt & Baker's Parks 1, nw nw sw 29-7n-20w, dr 623 ft. J. A. Everitt's Graumann 1, ne nw nw 11-5n-21w, c&p.

HUGHES COUNTY—Phillips' Becker 1, ne nw sw 8-5n-10e, dr 6010 ft. Homer Doup et al's Bank 1, ne ne nw 7-7n-9e, fsg 290 ft. Kenneth Ellison et al's Metro Life 1, cne ne 14-7n-9e, td abd 4136 ft.

JEFFERSON COUNTY—Massad & Swainsberger's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. H. W. Weir et al's Hayes 1, se se nw 23-7s-7w, dk.

JOHNSTON COUNTY—Patton et al's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft.

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W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, dr 2820 ft.

KAY COUNTY—E. J. Shaffer et al's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. E. J. Shaffer et al's Rudolph 1, ne ne sw 27-29n-1w, cel. Clark Nye's Willin 1, se se sw 24-27n-4e, c&p. Helmerich & Payne's Scott 1, se se ne 20-28n-1w, abd 3716 ft.

KIOWA COUNTY—Hughes & Reese' Fultz 1, se se se 10-6n-18w, fsg 1238 ft.

LOGAN COUNTY—Texas Co.'s Roper 1, cw¼ sw se 22-15n-1e, td 5542 ft, sd. Arrow Drlg. Co.'s Dobson 1, nw nw nw 23-17n-1w, dr 1020 ft.

LOVE COUNTY—Sinclair Prairie's Peabody 1, ne ne ne 35-6s-2w, pits.

MAJOR COUNTY—Ed Parsons' Patzkowsky 1, cnw¼ 10-20n-11w, rig.

MURRAY COUNTY—O. O. Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY — F. E. Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY — Mid-Continent's Irelan 1, sw ne sw 10-13n-10e, co 3431 ft. Broswood Oil Co.'s Lehman 1, nw sw nw 21-13n-10e, dr 1650 ft.

OKLAHOMA COUNTY—W. O. Allen et al's Weaver 1, ce¼ se nw 6-14n-3w, ru and sd.

OKMULGEE COUNTY—Phillips' Woods 1, nw sw sw 31-11n-13e, dr 3215 ft. H. D. Detrick et al's McCann 1, nw se sw 33-14n-11e, mach.

OSAGE COUNTY—Norbla-Carter's Norbla-Mullendore 1, nw nw nw 3-24n-6e, spd.

PAYNE COUNTY—Sagamore Drlg. Co.'s Moore 1, se sw nw 17-18n-1e, rig.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, sd 3320 ft. H. W. Lee's Weatherly 1, nw se nw 24-1n-7e, spd 45 ft. Riddle et al's Fee 1, nw sw se 11-3n-5e, dr 3850 ft.

ROGER MILLS COUNTY — Central Pet. Corp.'s Lambe 1, se se se 27-14n-21w, sd.

SEMINOLE COUNTY—H. V. Woodson & Marydun Oil Co.'s Gilliland 1, se se sw 24-11n-7e, td 4293 ft.

STEPHENS COUNTY — Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, dr 9035 ft. Helmerich & Payne's Pfile 1, sw sw sw 1-2s-7w, td 4246 ft, woc. Ed Parsons' Mouersberger 1, cs½ sw se 29-2n-8w, lcn.

TEXAS COUNTY—Hagey et al's Peck 1, cne¼ 6-1n-13ecm, td 2842 ft, 7-in csg 2766 ft, woc.

TILLMAN COUNTY—Smith's Hammell 2, ne nw nw 6-5s-15w, dr 1581 ft. Barney Cockburn et al's Nicholas 1 (owdd—otd 3022 ft), mit. Gibson-Jennings' Burleson 1, se se sw 35-2s-19w, lcn. T. B. Schoonover et al's Loftis 1, nw nw se 19-2s-18w, lcn. I.T.I.O. Co.'s Drumm 1, cn½ sw nw 32-2s-17w, set 6⅝ in csg 3793 ft, td 3795 ft. M. G. Martin's Parris 1, nw nw sw 3-3s-19w, dr 1770 ft. Caven et al's Southerland 1, sw sw nw 35-4s-16w, junked 44 ft.

WASHITA COUNTY—L. B. McWhirter et al's Fee 1, nw sw sw 34-8n-19w, dr 2004 ft.

WEST TEXAS

(This report confined to south and east portion of the Permian basin and all Ordovician and Delaware projects).

BREWSTER COUNTY—Floyd C. Dodson-B. A. Duffey et al's Texas American Synd. 1-A, near c ne ne GH&SA Ry. sec 66, blk 10, elev 4228 ft, top Delaware shale 2297 ft, top Simpson 6733 ft, sd 7062 ft. G. H. Storey et al's J. P. Wilson 1, c se nw of T&St. L. Ry, sec 3, blk 212, elev 3609 ft, sd 2545 ft.

CRANE COUNTY—J. W. Hampton et al's Thaxton 1, W. L. Wilkinson sur, dry and abd 2235 ft. Gulf Oil Corp.'s M. B. McKnight 3, near ne sw ne PSL sec 9, blk B-21, Ordovician test, elev 2693 ft, top Simpson 6079 ft, top Ellenberger 6164 ft, tested sul w 6278 ft, pb to 6175 ft, tested w and will abd; W. N. Waddell et al 7, c sw se PSL sec 4, blk B-27, Ordovician test, elev 2537 ft, dr 3350 ft. Loffland Bros. Co.'s Reidland 1, sec of PSL sec 2, blk B-27, Ordovician test, elev 2570 ft, td 5434 ft, cem whipstock 5170-96 ft, dr by pipe.

CONCHO COUNTY—Barnett Oil Developments, Inc.'s Sims 1, Carl Thiele sur No. 58, 3 mi nw Paint Rock, 4000-ft Ordovician test, rig.

COKE COUNTY—Barnett Pet. Corp.'s J. E. Mims 1, sec T&P Ry. sec 39, elev 2352 ft, sd 1685 ft. H. E. Ogden et al's E. C. Rawlings 1, swc of H&TC Ry. sec 391, blk 1-A, sd 2260 ft.

CROCKETT COUNTY—Moore Bros. Corp.'s Paul Perner 1, c nw¼ I&GN Ry. sec 37, blk 2, 2560 ft, top lime 1600 ft, dr brown sandy-lime 9086 ft, may abd. H. A. Ringle et al's A. C. Hoover 2, sw se nw GC&SF Ry. sec 14, blk 1, elev 2368 ft, sd 2105 ft. Rockmaker et al's A. C. Hoover 1, nec sw¼ B&B sec 1, blk FF, lcn. Stewart & Cormas' A. C. Hoover 1, c nw se of B&B Ry. sec 1, blk FF, elev 2380 ft, top salt 475 ft, top lime 1747 ft, testing 1930 ft.

CULBERSON COUNTY—Ross Brewer, Collins et al's C. M. Caldwell 1, sw¼ of PSL sec 14, blk 42, Delaware test, elev 3819 ft, top black lime 1880 ft, co 2022 ft. Jarrell, Earl Bell & Harrison's C. M. Caldwell 1, c sw of PSL sec 15, blk 109, Delaware test, sd 151 ft.

JEFF DAVIS COUNTY—H. F. Wilcox O&G Co.'s Jones-Coffield 1, nec of H&TC Ry. sec 121, blk 4, sd 3500 ft.

ECTOR COUNTY—J. D. Bodkins et al's W. P. Edwards 1, sw sw se T&P Ry. sec 37, blk 43, T-3-S, elev 2953 ft, top anhydrite 1842 ft, top salt 1860 ft, sd 4802 ft.

EL PASO COUNTY—Tri-State Oil Co.'s Chas. & L. M. Kinkel 1, ne ne ne sec 237, S. F. No. 7232, elev 3977 ft, dr 3525 ft.

FISHER COUNTY—Bond Oil Corp.'s Bertram 1, sec sw¼ labor 43, league 323, Bastrop C.S.L. sur, elev 1852 ft, base Sedwick 2764 ft, top Dothan 2800 ft, top Noodle Creek lime 2900 ft, ur 2969 ft.

TOM GREEN COUNTY—Humble's Lewis-Wardlaw 1, near c ne se H&TC Ry. sec 5, blk 17, Ordovician test, elev 2142 ft, San Angelo lime 340 to 630 ft, dr shale 4910 ft. Southern Cross Oil Co.'s J. W. Wilson 1, c nw AB&M sec 30, blk A, mim.

GLASSCOCK COUNTY—O. B. Greathouse et al's Burns 1, sw¼ of W&NW Ry. sec 211, blk 29, mim.

HOWARD COUNTY—H. L. Lockhart et al's Scott 1, sec of W&NW Ry. sec 67, blk 29, elev 2415 ft, dr 2140 ft. W. F. MacDermott et al's S. B. Capps-Anderson 1, swc T&P Ry. sec 18, blk 29, T-1-N, elev 2248 ft, top lime 2075 ft, dry and abd in sul w 3099-3101 ft. Roy A. Westbrook et al's Great West Ref. Co. 1, near nec of T&P Ry. sec 48, blk 32, T-1-N, elev 2469 ft, gauged 368,000,000 ft of nitrogen and oxygen at 1460 ft, prod declined and cased off, pb fr 3182 ft, dr new hole 3170 ft.

HUDSPETH COUNTY—Haymon Krupp Oil & Land Co.'s K. S. Briggs 1, nwc T&P Ry. sec 24, blk 73, Tsp. 7, run 10-in cas, td 2597 ft; S. J. Thaxton 1, near sec ne se T&P Ry. sec 34, blk 74, Tsp. 6, dr 3715 ft.

KENT COUNTY—Thad A. Bryant Jr. et al's Haggins 1, c nw ne H&GN sec 118, blk 1, 3 mi nw Girard, mim.

LOVING COUNTY—Barnett Pet. Corp.'s W. D. Johnson 1-A, sec ne¼ of T. P. Ry. sec 12, blk 56, Tsp. 1, elev 3044 ft, top Delaware lime 3675 ft, top sand 3704 ft, shot 170 qts 3678-3728 ft, tested dry, dd to lower sand 3844-46 ft, flowed oil by heads then water, dd to 3956 ft, dry and abd. Michigan O&G Co.'s M. Kyle 5, nw nw ne T&P Ry. sec 20, blk 55, Tsp. 1, top Delaware lime 3880 ft, top sand 3912 ft, pay 3928-65 ft, shot 100 qts 3912-65 ft, co; M. Kyle 6, nw se ne sec 20, elev 3094 ft, pay 3936-71 ft, shot 280 qts 2901-59 ft, flowed 227 bbls 41.9 gravity oil initial 1-in choke. M. Kyle 7, lcn. Woodley Pet. Co.'s TP Land Trust 1-A, nwc n½ s½ T&P Ry. sec 21, blk 55, Tsp. 1, elev 3068 ft, pay 3941-63 ft, shot twice, flowed 90 bbls oil, 2 bbls water initial.

MENARD COUNTY—G. A. Clements et al's A. H. Murchison 1, swc of sec 80, sd 460 ft. C. D. Hagerty et al's Callan 1, swc of e½ of J. M. Franz sur, sec 36, sd 199 ft.

MITCHELL COUNTY—Standard Oil Co. (Texas)' W. L. Foster 1, lse 6, nw se nw T&P Ry. sec 44, blk 29, T-1-N, elev 2239 ft, dr 2610 ft.

NOLAN COUNTY — Marland-Drake Drl. Co.'s E. W. Withers 1, c sw¼ T&P Ry. sec 65, blk 21, lcn.

PECOS COUNTY—Aero Gas & Ref. Co.'s Iowa Realty Trust 1, e corner H&TC Ry. sec 13, blk 10, rur; Johnson-Skelly 1-a, n½ of H&GN Ry. sev 40, blk 8, elev 2446 ft, top lime 2150 ft, dr 2490 ft. Harry Baker et al's White-Baker 1, nec of GC&SF Ry. sec 53, blk 194 ft, dr 705 ft. J. J. Dorr et al's Payton 2, nw part of H&GN Ry. section 99, blk 8, elev 2440 ft, dr 1265 ft. Ed. Falvey et al's Joe C. Trees 1, sw nw nw H&GN Ry. sec 63, blk 8, co 2055 ft. D. W. Francis et al's Westerman-Haggen 1-A, nwc of 186-ac lse, Rubian Phares sur, blk 166, elev 3155 ft, making gas, sd 2978 ft. L. B. Hoss & F. J. Downey's H. Cordez-Empire 1, nec of H&GN Ry. sec 81, blk 8, elev 2433 ft, top lime 1858 ft, top brown lime 1858 ft, pay 1974-2044 ft, flowed 171½ bbls oil initial after sd 2 weeks. Magnolia Pet. Co. et al's J. H. McKee 1-a, near nw nw sw H&GN Ry. sec 24, blk 9, elev 2385 ft, (jkd twice), top Simpson 4775 ft, sandy-lime pay 5280-89 ft, shale 5289-94 ft, flowed small heads 43 gravity oil briefly, rust to dd. Thompson & E. R. Minshall's Michaelson 1, c nw nw of T&St. L. Ry. sec 24, blk 146, elev 3023 ft, sd 3187 ft. Stanley A. Thompson et al's Elsinore Cattle Co. 1, se¼ of GC&SF Ry. sec 53, blk D, Ordovician test, elev 3938 ft, show gas 8065-73 ft, cem 5½-in pipe 7028 ft, dr plugs 7128 ft. Trans-Pecos Oil Co.'s F. M. Gallagher 1, ne ne nw T&P Ry. sec 9, blk 51, Tsp. 10, sd 1620 ft; Popham Land & Cattle Co. 1-B, s½ of GH&SA Ry. sec 235, blk 11 (3rd hole), sd 1540 ft. H. F. Wilcox O&G Co.'s Cerf 1, near c ne sw of T.&St. L. Ry. sec 27, blk 130, dr 1210 ft.

PRESIDIO COUNTY — Brite Production Co.'s L. C. Brite 1, ne¼ of GH&SA Ry. sec 113, blk 12, tested 2½ bbls oil daily at 4267-75 ft, lost hole, sdo.

REEVES COUNTY—Barnett Pet. Corp.-J. C. Hill & Conoco's Ely-Healy 1, c nw¼ of PSL sec 38, blk 71, Delaware test, elev 3166 ft, dr gray lime 3840 ft. Grisham-Hunter Corp.'s T. P. Land Trust 1, ne¼ T&P Ry. sec 40, blk 58, Tsp. 6, lcn. C. R. Mallison-Sid W. Richardson et al's Eliza M. Brown 1, near c sw¼ of H&GN Ry. sec 62, blk 4, elev 2686 ft, cem 7-in pipe 3690 ft, drl plugs. Ohio Oil Co.'s Popham Land & Cattle Co. 1, nw¼ of T&P Ry. sec 18, blk 54, Tsp. 10, fsh 20-in pipe, td 417 ft.

RUNNELS COUNTY — H. C. Hantho & Sherman Nelson's Bert Fletcher 1, E. C. Good sur No. 58½, elev 1769 ft, top Palo Pinto lime 4030 ft, top Strawn 4220 ft, so&g with w at 4384 ft, pb to 4360 ft, used 10,000 gals acid, tested salt water, dry and abd. Homer Price & A. E. Koener's J. C. Beddo 1, sub-div No. 51, D. Diaz sur, sd 3453 ft. F. G. Beaudoin & Rex Cannon's Geisecke 1, Geisecke-Russell dome, lcn for 5000-ft Ordovician test.

SCHLEICHER COUNTY—John M. Cooper

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et al's Bert Page 2, c ne se GH&SA Ry. sec 40, blk L, elev 2289 ft, Ordovician test, sd 5004 ft. Tex-Tor Oil Corp.'s Judkins-Spencer 1, c sw¼ of A. & B. Ry. sec 33, blk A, elev 2235 ft, Ordovician test, top Ellenberger (by sample) 5547 ft, dr 5725 ft.

SCURRY COUNTY—Robinson Drl. Co.'s A. C. Martin 1, c nw sw H&TC Ry. sec 147, blk 97, elev 2234 ft, top lime 1514 ft, pb fr 3515 ft to 2590 ft, shot 300 qts 2420-92 ft, pb to 2500 ft, used 1600 gals acid, lost cas seat. T. G. Shaw Oil Corp.'s First Nat'l Bank (Ft. Worth) 1, c nw¼ H&TC Ry. sec 112, blk 97, elev 2214 ft, top lime 1568 ft, dr 3180 ft.

STONEWALL COUNTY—Gen'l Crude Oil Co.'s J. D. Smith 1, sec of H&TC Ry. sec 371, blk 2, 13 mi n Rotan, dr 1295 ft. A. G. Swanson & Parriott's H. T. Carlisle 1, sw se ne H&TC sec 293, blk D, lcn.

SUTTON COUNTY—Ordovician Oil Co.'s J. T. Evans 1, nec sec 1, blk V-26, Lucy Stubblefield sur, elev 2126 ft, top Canyon, trace o&g, 2320 ft, top Strawn, with oil odor in water, 2860 ft, top Bend lime 3198 or 3315 ft, cem cavings and salt water 4057-73 ft, td 4083 ft. A. A. Basse, S. J. Sackett & J. W. Sorrells' W. A. Miers 1, c nw sec 54, GWT&P sur, blk 14, lcn.

STERLING COUNTY—John W. Sward et al's T. G. Brennand 1, se se ne H&TC sec 107, blk 2, lcn for 3000-ft test.

TAYLOR COUNTY—Dr. W. C. Bramham et al's Ernest Armstrong 1, swc ne se sec 40, Blind Asylum Lands, lcn. E. G. Mahan et al's Mrs. Edna Alexander 1, sec se sec 22, Blind Asylum Lands, lcn.

TERRELL COUNTY—R. A. Basurto et al's J. H. Phelps-Bates 1, near sec nw¼ sec 5, G. W. Turley sur A-4, Ordovician test, elev 2185 ft, sd 5600 ft. D. & S. Oil Co.'s Sam Bell 1, near swc ne sw of E. L. & RR sec 68, blk D-7, sd 345 ft.

UPTON COUNTY—L. H. Choate & F. T. Hogan's S. E. Carter 1, e¼ of H&TC Ry. sec 210, blk 6, lcn. W. D. Riser et al's King 1, nwc n½ MK&T Ry. sec 8, blk 3, fsh 210 ft.

WARD COUNTY—M. J. Delaney, Inc.'s J. E. Cooper 1, w¼ of H&TC Ry. sec 43, blk 34, elev 2558 ft, top anhydrite 1260 ft, dry and abd 3021 ft. L. B. Hoss & F. J. Downey's R. Avery-Atlantic 1, s¼ H&TC Ry. sec 36, blk 1, elev 2407 ft, run cas 777 ft; Viola Meyers 1, sw-80-ac of H&TC Ry. sec 17, blk 32, sp and sd. Magnolia Pet. Co.'s Geo. Sealy 2-46, ne sw ne of G&MMB&A sec 46, blk F, elev 2713 ft, top anhydrite 1595 ft, Rustler lime 1725-45 ft, top lime 2658 ft, dr 3020 ft. R. G. Patillo et al's Blair-Republic 1, n cor of H&TC Ry. sec 5, blk 32, dr 1035 ft. Schkade & Patillo's Dorr 1, near sec H&TC Ry. sec 35, blk 1, elev 2405 ft, dr 1910 ft. Frank T. Pickrell, Jean E. Fitzpatrick, Dodson et al's H. B. Carr 1, c w¼ of n¼ of H&TC Ry. sec 125, blk 34, Delaware test, dk; F. I. Dyer 1, w¼ of n¼ of H&TC Ry. sec 135, blk 34, Delaware test, dr 260 ft.

EAST TEXAS

ANDERSON COUNTY—Humble O&R Co.'s Southern Pine Lumber Co. 1-C (210-ac), John Morton sur, 2 mi ne Jarvis, elev 339 ft, top Woodbine 4284 ft, top Georgetown 5040 ft, top first anhydrite 7400 ft, massive anhydrite 7615-7793 ft, broken to 7828 ft, top Travis Peak 8895 ft, dry and abd 9155 ft. H. L. Parsons et al's H. R. Hemby 1 (213-ac), John Gossett sur, 7 mi ne Navarro, elev 263 ft, Pecan chalk 4063-4235 ft, Austin chalk 4985-5223 ft, top Woodbine series 5360 ft, top sand 5394 ft, pb fr 5487 to 5421 ft, gun-perforated cas 5409-19 ft, completed 21½ bbls distillate 9 hrs, and 8,150,000 ft gas daily via ½-inch choke.

BOWIE COUNTY—King Oil Corp.'s W. W. Ames 1, J. A. Talbott sur, 4½ mi nw Texarkana, elev 362 ft, td 3905 ft, fsh drill pipe; Nanny Watts 1 (12-ac), G. Brinbee sur, 4 mi w Texarkana, rur.

CHEROKEE COUNTY—Merica Oil Co.-W. L. Stone's Cherokee Dev. Co. 1, A. J. Acker sur, 2 mi e Maydelle, lcn abd. Gray & Wolfe's M. Dupree 1 (131-ac), Levi Jordan sur, top Pecan chalk 3940 ft, dr 4110 ft. J. G. Mayo et al's J. H. Bowling 1, W. H. Walters sur, 2 mi se Lone Star, mim.

DALLAS COUNTY—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapevine, sd 807 ft. Plaza Oil Co.-W. A. Brooks, Jr.'s B. J. Davidson 1 (75-ac), John D. Merchant sur, sp and sd.

DELTA COUNTY—O. W. Killam et al's Delta Farming Assn. 1, J. Dollahite sur, 4 mi ne Sulphur Bluff, elev 348 ft, top Woodbine 2712 ft, sd 2920 ft.

FRANKLIN COUNTY—Ajo Oil Corp. (was Chenault et al's) T. J. Sanders 1 (2-ac), C. Payne sur, Talco lower Trinity test, may dd from 4374 ft.

GREGG COUNTY—Humble & Gulf's E. D. Robertson 1 (11.4-ac), M. Mann sur, 2½ mi w by s of Longview, 4 mi e production, elev 272 ft, Austin chalk 3202-3341 ft, top Georgetown 3341 ft, top Paluxy 4541 ft, top first Glen Rose 4876 ft, top anhydrite stringer 5617 ft,

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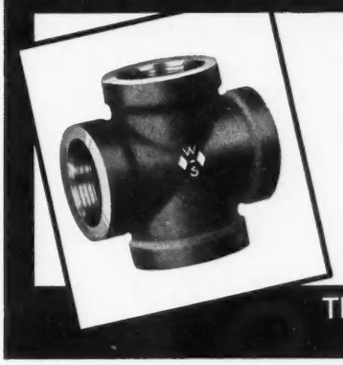

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COMPREHENSIVE INDEX

of the

PUBLICATIONS OF THE AMERICAN ASSOCIATION of PETROLEUM GEOLOGISTS 1917-1936

By

DAISY WINIFRED HEATH

A.A.P.G. PUBLICATIONS INDEXED
(20 Years of Geology of Oil and Gas)

The Bulletin, Volume I to Volume XX	**1917-1936**
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Geology of the Tampico Region, Mexico	**1936**
Gulf Coast Oil Fields	**1936**
Structural Evolution of Southern California	**1936**

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massive anhydrite 6214-6532 ft, top Travis Peak 7325 ft, dr 8265 ft.

HENDERSON COUNTY—E. B. LaRue et al's Breedlove-Mills 1 (232½-ac), J. Dunn sur, 5 mi nw LaRue, elev 485 ft, Pecan chalk 1906-70 ft, top Austin chalk 2635 ft, dr 2960 ft.

HOUSTON COUNTY—Peyton Bros. et al's J. P. Daniels 1 (100-ac), J. M. Procella sur No. 70, ½ mi n Percilla, lcn.

HOPKINS COUNTY—Walter L. Goldston-Normandie Oil Corp.'s H. J. Smith 10 (450-ac), J. A. Craft sur, sub-Trinity test, Sulphur Bluff field, elev 439 ft, top Paluxy pay 4499 ft, first anhydrite 5510 ft. massive anhydrite 5605-5707 ft, top Red Beds 5760 ft, pb fr water 5795-6600 ft to 4600 ft, perf cas 4500-20 ft, flowed 32 per hr initial.

LAMAR COUNTY—Cooper Bros. et al's L. B. Hayes 1, Luke Roberts sur, 1½ mi w Deport, elev 410 ft, sd 275 ft.

LEON COUNTY—Lone Star Gas Co.'s Sara Melasky 1 (81.98-ac), M. C. Lee sur No. 500, Buffalo area, cem sur cas.

LIMESTONE COUNTY — Pure Oil Co.'s Kendrick 15-T (96-ac), Mexia field, elev 508 ft, top Georgetown 3365 ft, top first Glen Rose 4270 ft, top broken anhydrite 5132 ft, Travis Peak series 5656-7676 ft, top lower Marine 7676 ft, jkd at 8847 ft, pb and tested water in Trinity and dry in Woodbine, dry and abnd. J. S. Cosden, Jr. et al's J. J. Bower 1 (15-ac), J. Breeding sur, near Prairie Hill, lcn. Stanolind & Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher sur, 5 mi n Kosse and on Thornton fault, elev 528 ft, Austin chalk 2791-2890 ft, top Woodbine 2980 ft, top Georgetown 3255 ft, top first Glen Rose 4026 ft, top first anhydrite 4886 ft, top Pettit 5375 ft, top Travis Peak 5528 ft, lower Marine 7595 ft, dr 8550 ft.

NAVARRO COUNTY—Mrs. Jane Robinson et al's Fortson Bros. 1, Eli Smith sur, 5 mi ne Corsicana, elev 345 ft, Austin chalk 1346-1585 ft, top Woodbine 2185 ft, sd 2216 ft. Natural Pet. Co.'s Karen Brown 1 (309-ac), W. T. Turner sur, 2 mi e Roane, elev 433 ft, rig. L. B. Orchard & A. G. W. Biddle's G. M. Gibson 1, Isaac Bird sur, 4 mi s Rural Shade, lcn.

UPSHUR COUNTY—Tom Hunter & American Liberty Oil Co.'s Dr. Chas. Carter 1, (80-ac), J. H. Fields sur, 1½ mi n Kelsey, Trinity test, elev 428 ft, Pecan chalk 2250-2690 ft, Austin chalk 3295-3332 ft, top Red Beds 5085 ft, top Paluxy 5590 ft, first anhydrite 5978 ft, massive anhydrite 6520-6756 ft, basal anhydrite stringer 6786-6807 ft, no shows, coring lower Glen Rose 6925 ft. L. & G. Oil Co.'s Henry Williams 1 (315-ac), L. S. Von Roeder sur, 2 mi nw Gracetown, elev 304 ft, sd in Georgetown lime 4009 ft.

EAST TEXAS BORDER COUNTIES

CASS COUNTY—V. A. Hughes & Co.'s Lyster 1, Wm. Bateman sur, claim so&g 1953-66 ft, top Georgetown lime 4215 ft, dr 4408 ft.

HARRISON COUNTY—Ark. Fuel Oil Co.'s C. M. Abney 1, Eason Little sur, elev 278 ft, pumping in mud to prevent another gas blowout in Hill, td 4820 ft. Eastern Shrevetex Oil Co.'s Mable George 1, J. S. Powell sur, pumping 8 bbls oil day, td 2505 ft.

PANOLA COUNTY—Preston et al's Rushing 1, Mannan Smith sur, owdd, td 2950 ft. Texas Co.'s Claude Adams 1, Thos. Cox sur, woc 13⅜-in csg 579 ft.

SHELBY COUNTY—Joe Burnham et al's (formerly Ed Gregory et al), George 1, C. C. Tutt sur, owdd, td 2950 ft.

SOUTH TEXAS

CORPUS CHRISTI DISTRICT

BEE COUNTY—Dirks' Beck 1, sec 17, dr 1815 ft.

COLORADO COUNTY — Coyle-Concord's Broussard 2, Hill-Dufner sur, dr 4898 ft.

DE WITT COUNTY—Davis' Afflerbach 2, sur 44, coring 4237 ft. Richardson's McCurdy 1, Hunt sur, mir.

HIDALGO COUNTY—Atlantic's American 1, sec 175, perf 8634-42 ft with 24 shots, flowing 8 bpd distillate, large volume gas, 2350 pounds tubing, 2450 pounds casing, Johnson's Daskam 1, por 45, lcn. Morton's Guerra 1-A, por 41, prep to sp.

JACKSON COUNTY — Magnolia's West Ranch 1, Musquiz sur, dr 5676 ft.

JIM WELLS COUNTY—Howell's Goldapp 1, Welhausen subd, wocs 600 ft. Magnolia's Seeligson 8, Los Jaboncillos gr, dr 4025 ft. Rowan & Hope's Adams 1, sur 19, wocs, set sur csg.

KARNES COUNTY—Randon's Radford 1, Martinez sur, sp.

KENEDY COUNTY—Sal Vieja's Garcia 2, Carricitos gr, lcn.

KLEBERG COUNTY—Magnolia's Dietz 1, sec 7, dr 6728 ft. Pure's State 1, tr 522, dredging canal to lcn.

LIVE OAK COUNTY — Chew & Hantho-Nelson's Bell 1, Parks sur, cor 4409 ft. H. and H.'s Nichols 1, Henry sur, dr 1540 ft. Hagan & Stewart & Parr's Brannon 1, sur 45, ru. Hannah's Wedding 1, Haughy sur, dr 2196 ft. Hickok & Reynolds' Land Bank 1, Henry sur, dr 650 ft. Richardson & Karotkin's Pope 1, sec 148, ru. Tatbo's Velasquez 1, blk 93, Simmonds subd, lcn.

NUECES COUNTY—Camp's Wardner 2-A (4), Stratton subd, dr 2760 ft. Coastline's State of Texas 1, tr 320, building island. Phillips Clark 1, sur 419, dr 1715 ft. Renwar's McKinzie 1, sur 419, testing, 5817 ft; Morgan 1, sur 413, dr 4656 ft. Rutherford's Stewart 1, sur 418, dr 4675 ft. Southern Minerals' King 5, blk 6, skid on. Texon's Horne 1, Palo Alto gr, wocs 250 ft. Union's Brown 1, sec 87, sp; Galladay 1, Agua Dulce gr, cor 7189 ft; Rivers 4-A, Palo Alto gr, dr 4015 ft; Simmonds 1, Agua Dulce gr, wocs, td 8706 ft, pb to 4810 ft.

REFUGIO COUNTY — Continental's Scott 1, Reojas sur, sd 1600 ft to dr wtr well. Hogan's Kelly 2, Power sur, dr 2075 ft.

SAN PATRICIO COUNTY — Conroe's Dougherty 1, McGloin sur, dr 5625 ft. Moore's Kelly 1, lot 24, mim. Plymouth's Brigham 1, Pauls subd, testing below 5044 ft.

VICTORIA COUNTY—Edwards' Robertson 1, Burnham sur, dk. Stanolind's Vandenberge 1, Benavides sur, mim.

WILLACY COUNTY — Magnolia's Armendiaz 1, Carricitos gr, dr below 8465 ft.

LAREDO DISTRICT

DUVAL COUNTY—Carter-Rubsam's Peters 1, sur 66, sp. Dovre's Hagist 1, sec 265, cor below 1400 ft. Gillespie's Hamilton 1, sur 85, sd 2241 ft, wo wtr. C. K. Gravis' Megerle 1, sur 245, prep sp. Frank Gravis' Schallert 1, sur 239, sd 5017 ft, mi heavier rig, to dd. Magnolia's Duval Ranch 1, sur 196, lcn; Lopez 1, sur 82, dr 6661 ft. Southwood's Nolen 1, sur 104, dr below 1900 ft.

JIM HOGG COUNTY—Smith & Hamill's Saunders, sec 9, fsg 2705 ft. Stephens' Gruy 1, Kohler subd, sd 2100 ft.

McMULLEN COUNTY—Hagan & Stewart & Loma's Regan 1, Hely gr, ru. Howell & Richardson's Martin 2, tr 124, dr 580 ft. Magnolia's Edrington 1, sur 85, dr wtr well. Reynolds' Shiner 1, sur 26, sp. Richardson & McCarty's Martin 1, sur 6, prep to resume dr, td 710 ft. Rowan & Nichols' Rhode 2, sur 21, cor below 1250 ft.

STARR COUNTY—Collins' Guerra 1, sh 20, dr 3826 ft. Dodd's Wardner 1, por 84, sd 1535 ft. Transwestern's Slick 1, sur 266, 5½ in at 4341 ft, td 6860 ft, testing through perfs.

WEBB COUNTY—Boysen & Jones' Watkins 1, sec 20, dr below 2700 ft. Colton-Lester-Mitchell, Inc.'s Lopez 1, sur 55, dr 2220 ft. Gilcrease's Trafton 1, sur 282, sd 75 ft. Moore & Meaders' Garcia & Villareal 1, sur 786, lcn. Smith & Story's Haines 1, sur 234, dr 1420 ft. Walker's Neal 1, sur 1008, lcn.

ZAPATA COUNTY—Brown's Gutierrez 1, blk 12, Cullinan subd, wocs, 6 in csg at 878 ft, pb td 884 ft, td 2362 ft. Edwards' Garza 1, blk 95, cor 1415 ft. Killam's Rodriguez 1, blk 9, sh 12, dr 304 ft.

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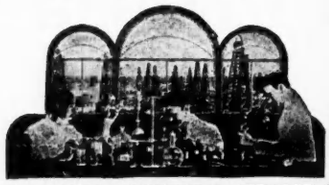

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SAN ANTONIO DISTRICT

BASTROP COUNTY—Bibb's Lentz 1, Wilkinson sur, ru pump, 2540 ft. Franklin's Thaxton & Yarrington 2, Bangs sur, dk.

BEXAR COUNTY—Ball & Du Bose's Miller 1, sur 55, sd 410 ft. Fair's Medina 2, Medina Irr. Farm tr subd, prep mim. Hickok & Reynolds' Ewert 1, York sur, dr below 1215 ft. Parsynsen's Fee 1, Lindsay sur, dr 1000 ft. Watson's Crouch 1, Gortaris sur, sd 1005 ft.

BLANCO COUNTY—Nixon's Crist 1, sur 94, prep mim.

CALDWELL COUNTY—Brady & Pummel's Jackson 1, Morris sur, testing after acidizing, td 2680 ft. Mac-Wag-Tree's Roberts 1, House sur, testing, td 2633 ft. Ogden's Riddle 1, Gorman sur, testing 2327 ft. Owens & Van Wagenen's Smith 1, dr 1400 ft.

DIMMITT COUNTY—Teas and Maryland's McKnight I.&G.N. sur, dr Georgetown 6652 ft.

EDWARDS COUNTY—Carter's Sweeten 1, G. C. & S. F. sur, dr 6300 ft. Evans & Love's Brown 1, G. W. T. & P. sur, dr 5733 ft.

FRIO COUNTY—Amerada's Melms 1, Alexander sur, still testing, td 3988 ft.

GUADALUPE COUNTY—Edes' Harborth 1, Thomas sur, sd around 100 ft. Kallison's Burris 1, Ira Nash sur, dr 3055 ft. Robertson's Neighbors 1, Swift sur, dr 1905 ft.

KENDALL COUNTY — Landon & Holifield's Sidensticker 1, Rodriguez sur, sd 817 ft.

KERR COUNTY—Edmiston's Saul 1, sur 47, lcn.

MAVERICK COUNTY—Wellington's Chittim 1, sec 129, ru to dd from 3287 ft; Chittim A-1, dr 1500 ft.

MEDINA COUNTY—Trentman & Merrit's Carle 1, Johnson sur 72½, sd 3010 ft.

MILAM COUNTY — Tuxedo's Graham 1, Cronea sur, sd 899 ft; Graves 1, Robertson sur, dr 850 ft.

UVALDE COUNTY—Wilcox's Morris 1, Carillo sur, sp.

WILLIAMSON COUNTY—Aldridge's Croschewsky 1, Parrass sur, dr 950 ft.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point area, S. F. Austin sur, preparing to dr ahead at 7734 ft.

CHAMBERS COUNTY—A. A. Cameron's White 1, Canada Ranch area, S. Brill sur, dk. Laverne Decker's Broussard Trust 1, Double Gum Bayou area, H. & T. C. No. 30, lcn. Salt Dome & Standard of Texas' State 1, in Galveston Bay, reaming 5974 ft.

GALVESTON COUNTY—Sun's Cade & Co. 1, Bolivar prospect, A. Dickson sur, canal.

GRIMES COUNTY—Hubert Holt et al's Greer 1, Carlos area, P. B. O'Conner sur, dr shale 1458 ft.

HARRIS COUNTY—W. S. Howell's Root 1, Battleground area, A. McCormick sur, no report. Humble's Rohlf 1, n of Crosby, J. Sellers sur, dr shale 4084 ft.

JEFFERSON COUNTY—J. E. Harwell's State 1, in Gulf of Mexico, coring shale 3800 ft. Humble's Garth Land 1, n of Nome, S. Horton sur, roads. Humble's McFaddin-State 1, in Gulf of Mexico, driving piling. Glenn H. McCarthy's Broussard Trust 1, Cheek area, C. Hillbrandt sur, dr cement 7732 ft.

MATAGORDA COUNTY—Pierce Estate's Fee 1, n of Van Vleck, I. & G. N. sur, washing 6595 ft. Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, dr shale 9410 ft.

WHARTON COUNTY—Strake's Strunk 1, Lissie area, L. P. Jennings sur, coring shale 9243 ft.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, pb to 2600 ft, temp abnd, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, sd for more drill pipe, td 2620 ft.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw ne se 19-4n-24e, elev 110 ft, cemtd off caving hole at 3935 ft, woc.

POLK COUNTY — Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk.

SUWANNEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, sd for heavier rig, 200 ft.

Letters to the Editor

K-M-A Slip

Referring to your issue of January 17, and more particularly the article written by your Mr. Grady Triplett in connection with the K-M-A field.

On page 36, you will note there appears a print of myself and comment to the effect that I am President of Consolidated Oil Company.

This statement is in error for the reason I have no connection with Consolidated. I am President of Petroleum Producers Company, and have been connected with this company since April, 1921.

JOHN F. O'DONOHOE.

Wichita Falls, Texas.

Sometimes the best of intentions go astray. We hereby correct our mistake, and apologize to you personally.

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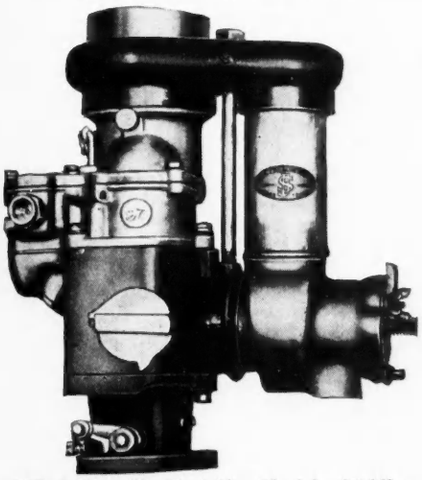

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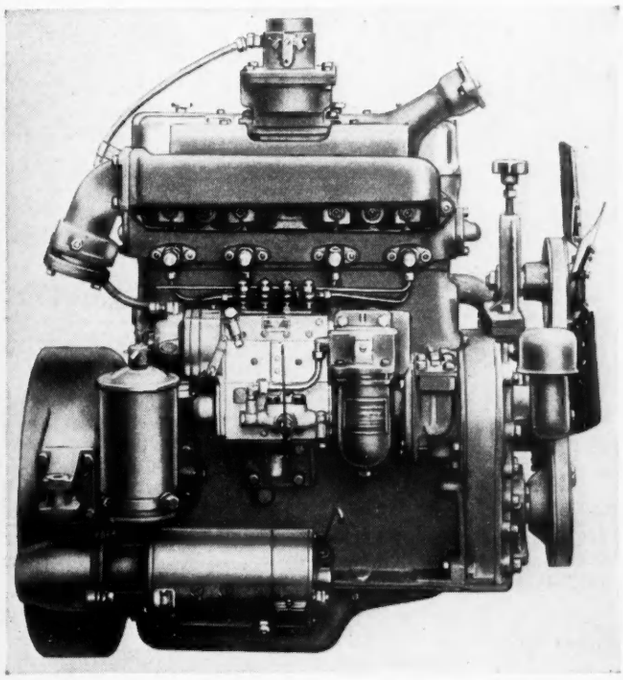
DIESEL ENGINE
The Buda Company

The Buda Company, Harvey, Illinois, recently developed a new model Diesel engine, 4-DT-196, which it believes to be the smallest four-cylinder, four-cycle, portable Diesel built in America today.

The 4-DT-196 is the smallest of the Buda Diesel line. This particular model was developed particularly for use in small trucks, small power shovels, and tractors. In addition to these uses, the model is adapted to many types of industrial, oil field and marine applications.



This new engine has a bore of 3⅝ inches, stroke of 4¾ inches, and a displacement of 196 cubic inches. The compactness of the engine permits interchangeability with most makes of gasoline engines of comparable power. The crankcase and cylinder castings are integral, and are made of chrome nickel iron. The cylinder liners are easily removable. The crankshaft, which is carried in the block, is 3 inches in diameter, and has 5 wide, precision type main bearings. Connecting rods are 9½ inches center to center. The lubrication is by positive force feed to all crankshaft bearings, connecting rod bearings, valve rocker arms, and timing gears.

MOTOR PUMP
Gardner-Denver Company

Gardner-Denver Company, Quincy, Illinois, announces a new close-coupled centrifugal motor pump, designed for capacities up to 250 gallons per minute and heads up to 250 feet at speeds of 1750 and 3460 revolutions per minute. The speed depends upon the required capacity and head. Known as Type H, the new pump meets the requirements of all general pumping service.

The pump is single suction, having a single stage enclosed impeller made of standard bronze. The pump and splash-proof motor are mounted together to form a complete and compact unit. An adjustable bearing in the outboard end of the motor compensates for wear between the clearance spaces in the pump. Because no wearing rings are needed in this type of construction, they have been eliminated, and the usual trouble of replacing them will not be experienced.

Gardner-Denver Motor Pump

This new pump can be installed in any position; on the floor, on the wall or on the ceiling and either horizontally or vertically. The pump is so compact that it may be used for portable and semi-portable as well as stationary operations.

ELECTRODES
Metal & Thermit Corporation

Metal & Thermit Corporation, New York, has announced two new electrodes for manual arc welding, known as Murex Vertex and Murex Conex electrodes.

The new Murex Vertex electrode is a reverse polarity rod designed for welding mild steel in flat, vertical and overhead positions, and is used for general shop work where positioning of parts during welding is not practical. It is also employed in structural welding, such as, shipbuilding, bridge and building construction.

The new Murex Conex electrode is an all around type that may be used in all positions and readiy bridges gaps between plates where assembly fit-up is poor. It is a straight polarity electrode.

These electrodes serve to round out the Murex line, which includes 20 different types of welding rods for mild steel fabrication, the repair of manganese steel parts, the building up of wearing surfaces, and for welding a number of the new high-strength, low-alloy steels.

ACETYLENE GENERATORS
Air Reduction Sales Company

Air Reduction Sales Company, 60 East 42nd Street, New York, announces addition of two double-rated stationary acetylene generators to its line of oxy-acetylene equipment. The new double-rated generators are available in both 300 pounds and 500 pounds carbide capacities and have rated delivery capacities of 600 cubic feet and 1000 cubic feet of acetylene per hour respectively.

As in the Airco-DB single-rated stationary generators the design makes the best use of the space available and results in a uuit which is dependable, safe, and has the advantage of having all its parts accessible for inspection or cleaning. The pressure control is simple, effective, and has a long and entirely satisfactory experience behind it. It has the advantage of being located at the top of the generator where water and lime cannot get at it and hinder its efficiency.

An important safety feature of these generators is in the method of discharging the sludge when recharging. The

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They are ideal for common barrels. For insert pumps we recommend TEX TYPE Plunger Fittings. This valve is an assembly of a large number of Composition Rings separated by metal washers. It adapts itself readily to the tube in which it works. Tests prove that 5 to 13 per cent more fluid is pumped per hour during an exceptionally long life. Try them and you will be convinced.

Where Obtainable ?

Leading B-M-W Products are obtainable at supply stores: ● TEX TYPE Plunger Fittings and Valves; ● ADMORE Insert Pump Anchors; ● NEILSON Tools (Safety Sucker Rod Hooks, Tubing Hooks, Rod Elevators, Sucker Rod Sockets, etc.); ● BALLS and SEATS (made for every pumping service); ● ADMORE Liner Barrels; and ● COLLINS Belt Clamps.

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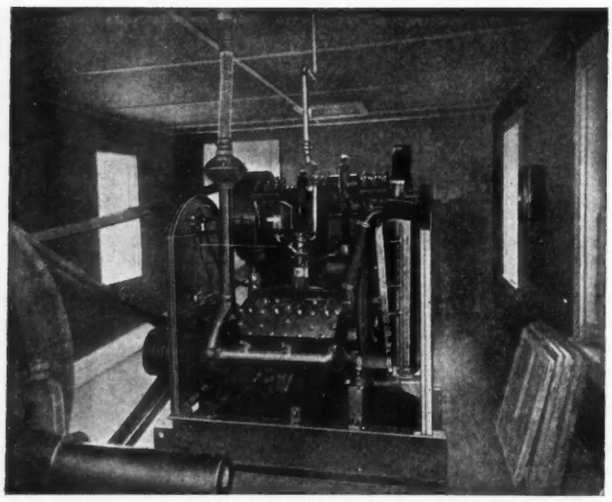

This KRW Industrial Unit operating on natural gas fuel has been on 24-hour service since August 1936. Drives a triplex pump to maintain a water pressure of 250 to 300 lbs.

THE KRW INDUSTRIAL POWER UNIT using the FORD V-8, 85 Horsepower Engine Produces Dependable Power at the Lowest Cost. Pays for Itself Out of Savings in a Few Months.

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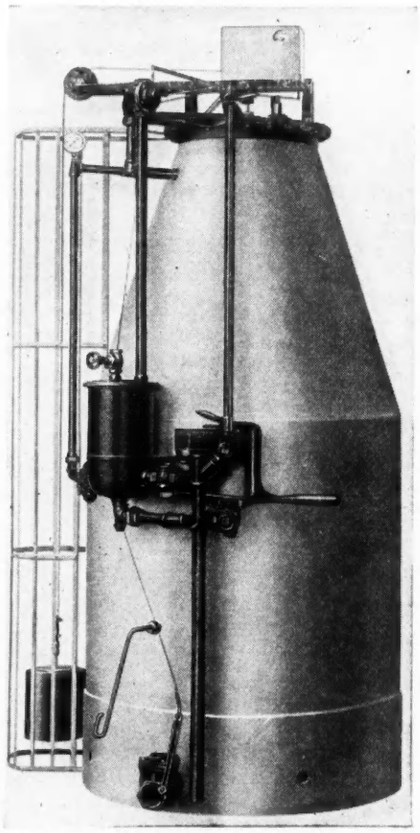
sludge is forced out by the existing pressure in the generator without opening the generator to the atmosphere. Thus air is prevented from being drawn in as the water



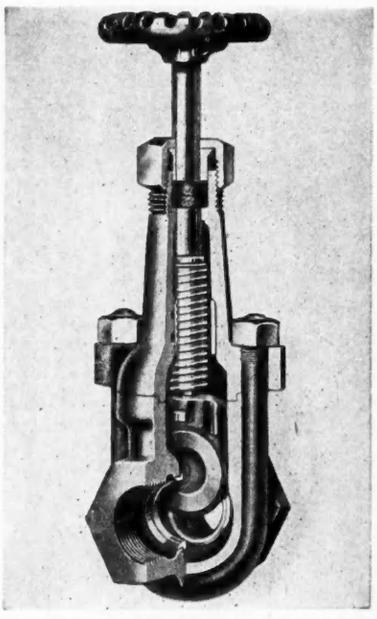
Airco double-rated stationary acetylene generator

runs out, thereby keeping the air concentration in the generator to a minimum value which adds materially to the safety margin of the apparatus.

GATE VALVES

The Fairbanks Company

The Fairbanks Company, 20 E. 4th Street, New York, recently brought out an improved U-bolt gate valve which has been tested for 150 pounds steam working pressure and 225 pounds gas and liquid pressure. This valve was designed to meet the demand for an extremely rugged valve at a low cost, and is especially adaptable for the exacting service in the gas and petroleum industries, as well as for ordinary steam, water and air lines. Simple in design, with but a few parts, it can be taken apart, inspected and cleaned with a minimum of effort and time.



Fairbanks Improved U-bolt Gate Valve

These U-bolt valves are made in sizes from ½ to 4 inches.

UNSHAKO

The Nut that can't Shake Loose

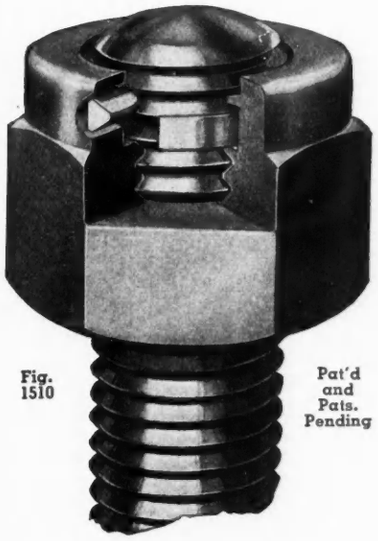


Fig. 1510

Pat'd and Pats. Pending

Cutout section shows the Locking Ring in position.

Vibrating, jarring, reciprocating machines are a constant headache for the workman who must keep them tight and running at top performance.

On this type of equipment ordinary nuts are useless, many of the nut locking devices are little better. That's where it pays to equip with "Unshako."

it licks Vibration...every time

"Unshako" is different in principle . . . a built-in ring locks the nut on the bolt or stud. Once it has been tightened up the "Unshako" stays there. No ifs, no buts . . . you can depend upon its staying put until you want to release it . . . then it only takes the help of an ordinary wrench and off it comes with no trouble at all.

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PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

By JOSEPH ZABA, E. M. M. Sc.
Petroleum Engineer, Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent,
Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

As a result of this collaboration of effort the publishers of this volume feel that it is a most valuable contribution to oil trade literature.

Its purposes are distinctly practical. The tables, formulae, and figures shown are practical rather than theoretical in nature. It should save the time of many a busy operator, engineer, superintendent, and foreman.

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Chapter III — Power Transmission
Chapter IV — Tubular Goods
Chapter V — Drilling
Chapter VI — Production
Chapter VII — Transportation

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This Week with the Industry's EQUIPMENT SUPPLIERS

Lufkin Foundry Transfers Ralph Noble to Alice

Lufkin Foundry & Machine Company, Lufkin, Texas, has announced the appointment of Ralph Noble, for the past 11 years sales and service man for the company, as manager of the office and warehouse at Alice, Texas.

Noble has had considerable experience in this line of work, having served in practically all the oil fields in the Mid-Continent and Gulf Coast areas.

Worthington Appoints Meiter Manager of Buffalo Office

Worthington Pump and Machinery Corporation, Harrison, New Jersey, announces the appointment of W. A. Meiter as manager of its Buffalo, New York, sales office.

Meiter has been a member of the Worthington organization since his graduation from Ohio State University in 1927, and has served the major portion of his time as a salesman in the corporation's Cleveland territory. He succeeds C. C. Scott, who will devote his time to special work in the Buffalo district.

R. W. NOBLE
Representative, Lufkin Foundry & Machine Company, Alice, Texas

Chicago Museum Exhibits Secured for Tulsa Show

The largest and most complete display of working models, static models and dioramas of oil equipment and geological surface sub-structures ever to be assembled at an oil exposition were assured at a joint meeting of the International Petroleum Exposition executive and scientific and technical committees recently. Dr. C. K. Francis gave the meeting the final decision of Dr. Gustav Egloff, director of research for Universal Oil Products Company and chairman of the scientific committee, on the tentative schedule for exhibits and their location in the new Hall of Science building.

A. C. Carlton, director of the Chicago Museum of Science and Industry where the exposition will obtain most of its scientific exhibits, returned from Chicago with Dr. Francis in order to address the meeting. Carlton said that the models and dioramas for the petroleum show, from May 14 to 21, is obtaining from the Museum cost over $250,000 to construct.

B. W. Logue, chemist with The Texas Company, F. J. Hinderliter, president of Hinderliter Tool Company, and one of the vice presidents of International Petroleum Exposition, and A. C. Carlton, director of Chicago Museum of Science and Industry, examining a blue print of the Hall of Science and the proposed placing of exhibits, from the museum, for the oil show, to be held in Tulsa from May 14 to 21.

The Timken Roller Bearings Company Engineers Advanced

The Timken Roller Bearings Company, Canton, Ohio, announces the appointment of A. L. Bergstrom as executive engineer to coordinate some of the varied engineering activities of the company. He succeeds Ernest Wooler, who recently resigned.

A graduate of the Royal Technical Institute of Sweden, Bergstrom spent several years with the Krupp organization in Germany. After a number of years in design work in this country, he became connected with the Timken Roller Bearing Company in 1929 in the works engineering department, advancing to the position of chief works engineer, which position he filled until his appointment as executive engineer of the company.

With Bergstrom's appointment, the company also announced the following promotions in the several divisions: R. M. Riblet to be chief engineer of the automotive division; J. B. Baker to be assistant chief engineer of the automotive division and chief engineer of the rock bit division. S. M. Weckstein is appointed chief engineer of the industrial division, M. C. Edwards will be chief engineer of the fuel-injection equipment division, W. C. Makley will be chief works engineer, and E. J. Reagan, general service manager.

Stahl Chief Engineer for Emsco at Houston

Emsco Derrick & Equipment Company announces the appointment of L. W. "Les" Stahl as chief engineer of the company's Houston machinery division with headquarters in Houston.

Stahl first became connected with the organization early in 1937, and during the past year has been head of a new department, created for the development of rotary drilling equipment, at the home office in Los Angeles.

L. W. STAHL
Chief Engineer for Emsco at Houston

He is a graduate of the University of California School of Mechanical Engineering, and has been connected with a number of the major manufacturing organizations closely affiliated with the oil industry.

Clemens New Representative For Martin-Decker Corporation

Martin-Decker Corporation, Long Beach, California, has recently appointed Jack Clemens as its new Mid-Continent representative.

Although a newcomer to the Mid-Continent area, Clemens has been with

JACK CLEMENS
Mid-Continent Representative for Martin-Decker Corporation.

the company for almost 10 years, and is thoroughly familiar with the scientific instruments which comprise the Martin-Decker line. He will work in conjunction with Reed Roller Bit Company, Houston, which handles the company's line in the Mid-Continent, his headquarters being at Odessa, Texas. From this point he will cover the West Texas, Southwest Texas, and New Mexico territories.

New Casing Welding Service Organized in Houston

U. C. Murcell, Inc., has been organized to engage in casing welding service. Headquarters of the company have been established in Houston. Temporarily the concern is located at 612 Louisiana Ave.

Bob Murcell is president of U. C. Murcell, Inc., while Doc Maier is general superintendent. Both are well known in California. G. E. Tyson, formerly sales manager at Houston for the Hydril Company, will be manager of the company.

The Lane-Wells Company Makes Personnel Shifts

Effective February 1, Walter Wells, president of The Lane-Wells Company, has announced a number of changes in personnel.

E. R. Smith has been transferred from district managership at Houston, to the Los Angeles headquarters. Here he has been assigned to the development of Lane-Wells service in foreign fields.

M. E. Montrose has been transferred from Oklahoma City, where he functioned as district manager, to Houston, where he becomes division manager at the Houston office.

R. B. McCullar, former assistant district manager at Oklahoma City, has been named division manager.

Bruce Barkis, with offices at Los Angeles, becomes manager of sales development. Barkis' work will cover all Lane-Wells services and products.

Norman Dorn has been named chief engineer in charge of operations for the organization.

The Lane-Wells Company has established a field office at Seminole, Oklahoma, according to Bruce Barkis, manager of sales development. This office will be directly in charge of E. E. Porterfield.

Slater to Represent The S. M. Jones Company on West Coast

The S. M. Jones Company announces the appointment of W. F. Slater as Pacific Coast representative with headquarters at 2439-41 Hunter Street, Los Angeles. Slater will work in close coordination with Hillman-Kelley Company, agents for The S. M. Jones Company in California.

W. F. SLATER
Goes West for Jones Sucker Rods

Slater assumes his duties in California with a background of experience in field engineering and pumping problems affecting sucker rods. He was educated in engineering at the University of Oklahoma and had operating experience on some of his father's properties in the Glenpool territory. In 1936, he joined the field engineering department of The S. M. Jones Company, being later appointed Tulsa district representative, covering the technical headquarters of many of the large Mid-Continent operators. This experience put him in contact with pumping conditions in a variety of fields such as Oklahoma City, Rodessa, Kansas, West Texas and the Gulf Coast, so that coming to California he has a large diversification of experience.

Inferno Company Appoints Ellis Houston Manager

The Inferno Company, Shreveport, Louisiana, has appointed John W. Ellis manager of the company's Houston office, which embraces the Gulf Coast territory. His address in Houston is 508 West Pierce and his telephone number is Jackson 2-7451.

JOHN W. ELLIS
Houston Manager for The Inferno Company

Ellis has been connected with The Inferno Company for a number of years and has had extensive practical oil field experience before he became associated with this concern. Before coming to Houston he was general sales manager for Inferno, with headquarters in Shreveport.

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CATALOGS . . . BULLETINS

Helpful Publications Which Manufacturers Will Be Glad to Send Free for the Asking

Gears and Speed Reducers

D. O. James Manufacturing Company, 1114 West Monroe Street, Chicago, recently announced the release of a new catalog, covering gears and speed reducers of all types. Complete engineering data are also contained in this book.

Pipe

Johns-Manville, 22 East 40th Street, New York, has recently published a well illustrated book entitled, "Transite Pressure Pipe," which tells the story of asbestos-cement pipe from the time it was first developed. In addition data on the cost of pumping water, as well as other technical information relating to results of investigations, etc., is given.

Steels

Timken Steel and Tube Division of Timken Roller Bearing Company, Canton, Ohio, recently released a "Guide for Users of High Temperature Steels," which is listed as Technical Bulleton No. 20. The folder presents technical data relating to the various properties of seamless tubes and in addition carries a chart showing the effect of heating nine different steels under different temperatures.

Couplings

Baldwin-Duckworth Chain Corporation, Springfield, Massachusetts, recently issued bulletin No. 63, in which the various types of roller chain flexible couplings are discussed. The bulletin is well illustrated and contains several tables as to dimensions and prices.

Couplings

Koppers Company, Bartlett Hayward Division, formerly The Bartlett Hayward Company, Baltimore, Maryland, describes in a well illustrated, 39-page bulletin, the various types of Fast's self-aligning couplings, giving helpful information for the application to various problems.

Wrought Iron

A. M. Byers Company, Pittsburgh, in a recent bulletin, entitled "101 Uses for Wrought Iron" gives a vivid illustration of the many applications of wrought iron. It is a very comprehensive picture of where and how wrought iron is used.

Electric Tools

Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut, recently published a 50-page bulletin describing its various types of electric tools. It contains valuable data with reference to the application of electric tools.

Oil Well Literature

Oil Well Supply Company, Dallas, Texas, recently issued the following new bulletins. Bulletin No. 128-B on Sucker Rods; Bulletin No. 121-A on No. 10 Pumping Unit; Bulletin No. 171 on Utility Pumping Jack; Preliminary Bulletins Nos. 174, 154-A and 172 on Hoists. When writing, please mention the bulletin number.

Respirators

Mines Safety Appliances Company, Braddock, Thomas and Meade Streets, Pittsburgh, has published a new booklet entitled "Pertinent Questions and Answers Concerning Dusts." This bulletin answers some of the important questions that arise continually regarding the nature and effects of dusts.

Fire Prevention

The Linde Air Products Company, 205 East 42nd Street, New York, recently brought out a new booklet entitled "Preventing Welding and Cutting Fires," which includes safe and sure rules to follow for preventing the possibility of welding or cutting fires.

Flow Meters

The Foxboro Company, Foxboro, Massachussetts, recently issued a new bulletin, describing special flow meters for high-pressure measurement.

Hoists

Sullivan Machinery Company, Claremont, New Hampshire, describes in a recently issued Bulletin 76-C its various types and sizes of shaft hoists.

Tubing and Couplings

Packless Metal Products Corporation, 37-14 29th Street, Long Island City, New York, recently announced publication of Bulletin No. 500, giving specifications and data on seamless flexible metal hose, detachable self-sealing couplings, self-flaring tube couplings and copper tubing.

Motors

Century Electric Company, 1806 Pine Street, Saint Louis, Missouri, presents in a recent bulletin valuable information concerning the electrical characteristics of fractional-horsepower motors, suggesting how these characteristics can be most effectively applied to motor-driven machinery and appliances.

Flomatic Regulator

Northern Equipment Company, Erie, Pennsylvania, announces Bulletin No. 409-A on the Copes flomatic regulator. This pamphlet gives complete specifications.

Vertical Motors

Fairbanks, Morse & Company, 900 South Wabash Avenue, Chicago, describes in Bulletin No. 1410 the vertical hollow and solid shaft polyphase, ball-bearing, squirrel-cage, induction motors.

Sucker Rods

The S. M. Jones Company, Toledo, Ohio, has published a comprehensive booklet entitled "Fitting Sucker Rods to Pumping Conditions." This illustrated booklet discusses the major pumping problems and the methods used to solve them. It also contains some interesting discussions on rod breaks, how sucker rods are tested for greater strength and ductility, fatigue tests, and other brief discussions on technical subjects.

Wire Rope

American Cable Division of American Chain & Cable Company, Wilkes-Barre, Pennsylvania, recently published a 32-page booklet entitled "Greater Dollar Value" which shows how to save time when installing new lines. The booklet is profusely illustrated with pictures of the candid camera type.

Steam Hook-Ups

Sarco Company, 183 Madison Avenue, New York, in Bulletin No. 175 outlines some of the fundamental principles of selection and installation of steam traps and accessories, and temperature regulators.

Oil Field Equipment

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, deals in Bulletin No. 163 with rotary drilling rigs, mud screens and other oil-field equipment developed and built by the company. This well illustrated publication explains fully the application and use of direct-current apparatus in rotary drilling equipment.

Bearings

The Timken Roller Bearing Company, Canton, Ohio, recently issued a 52-page supplement to the engineering journal. This supplement describes and illustrates the various applications of single and double row bearings to steam, gasoline, Diesel engines, etc.

Vertical Drives

Foote Bros. Gear & Machine Corporation, 5309 South Western Boulevard, Chicago, recently announced publication of Bulletin No. 601, entitled "IXL Agitator Drives." This bulletin contains complete ratings, specifications, dimensions and descriptions of the IXL type AD vertical agitator drives.

Power Transmission Equipment

Boston Gear Works, 955 West Washington Boulevard, Chicago, recently issued a new catalog, No. 52, containing descriptions and specifications of the company's various products.

Wire Rope

Broderick & Bascom Rope Company, 4203 North Union Boulevard, St. Louis, Missouri, announced publication of its new Riggers' Handbook, which contains considerable information regarding wire rope slings and fittings and the splicing and socketing of wire rope.

Automatic Boiler Regulation

The Brown Instrument Company, Philadelphia, has published Bulletin No. 5001 in which the various problems of boiler regulation are discussed.

Forged Tools

The Billings & Spencer Company, Hartford, Connecticut, has released a new catalog describing and illustrating its line of forged tools. This catalog features the new line of Vitalloy wrenches, double hex box wrenches, shop tools, etc.

Water-Well Drill

Bucyrus-Erie Company, South Milwaukee, Wisconsin, has released a new Bulletin—21-W-2, illustrating and describing the company's 21-W water-well drill. A complete story concerning all the working parts and special advantages and outstanding features of the unit is given.

Laboratory Appliances

Fisher Scientific Company, 711-723 Forbes Street, Pittsburgh, has published a booklet entitled "More Modern Laboratory Appliances" which represents a supplement to "Modern Laboratory Appliances," a catalog and reference book describing laboratory instruments and apparatus. This new supplement presents equipment and supplies which have been introduced since the publication of the general catalog.

Alloys

Haynes Stellite Company, Kokomo, Indiana, describes in a recently published bulletin Hastelloy alloys, a series of alloys which have been developed to withstand certain severe conditions of chemical corrosion. Included in this booklet are the physical and chemical properties of Hastelloy alloys, and information indicating how and where these alloys can be economically used.

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Squeaks from the Bull Wheel

What a Man!

"Mother," said a little boy after coming from a walk, "I've seen a man who makes horses."

"Are you sure?" asked his mother.

"Yes," he replied. "He had a horse nearly finished when I saw him; he was just nailing on his back feet."

His Weakness

She was an attractive young widow. She entered the hotel lounge and seated herself next to a handsome and dashing young brute. She coughed lightly, but the stranger ignored her presence. When their eyes finally met, she shot at him a flirtatious glance that indicated plainly that she desired to make his acquaintance. With all of this the male seemed cool and gave no answering sign.

Finally a handkerchief dropped to the floor and she murmured softly, "Oh, I've dropped my handkerchief."

The man turned an eye to the woman and responded, "Madam, my weakness is beer."

Cosmopolitan

An Englishman, new in a Mexican mining camp and undecided whether one of his companions at mess was an American or a native who spoke English, finally ventured the query: "Are you a foreigner here, also?"

The fellow gazed at him for a wrathful moment. Then: "Foreigner? Hell, no! I'm an American."

Every Where

Newlywed (honeymooning in the West) wired his boss. "Please extend my vacation; it is wonderful here."

Boss wired back: "Come back at once; it is wonderful any place."

A Fishing Ground?

"They don't seem to be biting this morning," observed the man with the fly-rod to the two who came by carrying bags.

"Why there are no trout in that water! Where do you think you are?"

"Isn't this the pond where the city just put in all those big brownies?"

"You're on the wrong track, friend. You want Groveport. This is the water hazard on the Memorial Golf Course."

"And there's nothing in here?"

"Well," interposed the other member of the twosome, "I wouldn't go so far as to say that. You might find a few perch—guttapercha."

Revolt of the Hitch-Hiker

"After the Revolution," I said, "I'll be driving a swell car like this and you'll be thumbing rides along the highway."

My benefactors said, "Huh?"

"You heard me," I replied. "Things won't always be like this. We hitch-hikers will rise one of these days, and take what's coming to us."

After thinking it over, he said to me: "You're liable to get what's coming to you before one of these days."

This remark sounded unpleasant, so I ignored it.

"In the meantime," I continued, "we are organizing to demand justice and enforce our rights. We want fewer dull stories from the driver, a hot dog at every stop for gas, the right to demand more speed when late for appointments, the privilege of . . . don't you know it's extremely rude to turn on the radio when someone is talking?"

Disillusioned

Every year college deans pop the routine questions to their under-graduates: "Why did you come to college?"

Traditionally the answers match the questions in triteness. But last year one University of Arizona girl unexpectedly confided:

"I came to be went with—but I ain't yet!"

Please Wait

"Now that we're engaged dear, how do you think I'll strike your mother?"

"Oh, darling, won't you wait at least until we're married?"

No Romance

"So you met your wife at a night club? Wasn't it romantic?"

"Naw, it was disastrous. I thought she was home taking care of the kids."

Freedom

"Pop, what is a free-thinker?"

"A free thinker, my boy, is a man who isn't married."

So There!

"Little boy, why are n't you in school?"

"Hell, lady, I ain't but three years old!"

Handicap

"Goodness, that deaf and dumb carpenter looks as if he were going wild!"

"Yes, he just pounded his thumb with a hammer and can't find his pencil and paper."

Style Critic

"Do you like short skirts, Mike?"

"Naw, they get lipstick on me shoit when I dance wit them."

A Rainbow

"He's red when he's embarrassed.
"He's purple when he's angry.
"He's yellow when he's cowardly.
"He's blue when he's loyal.
"He's white when he's straight.
"He's green when he's ignorant.
"He's colorless when he's uninteresting."

Cooperation

"I'm going to invent an auto brake that will bring a car going 40 miles an hour to a dead stop in 20 feet."

"That's fine. Then I'll invent a gadget to keep the driver from going through the windshield."

Reduced Opportunity

"When I was your age, I was working for $3 a week in a store. At the end of 5 years I owned the store."

"Well, things are different nowadays, Pop. They have cash registers."

Cheap

Dad criticized the sermon. Mother thought the organist made a lot of mistakes. Sister didn't like the choir's singing. But they all shut up when little Billy chipped in with the remark: "I think it was a darn good show for a nickel."

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GOTT Water Cans are the practical way to keep drinking water cool for long periods, protected from impurities and always handy to the job. Snug fitting large removable top, strongly built to withstand rough usage. GOTT Water Coolers have extra large covers and a handy non-leaking push button faucet. Your Supply Store has them, get one today! . . . . . .
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Clark Bros. Co.	—
Clark Machine Co.	—
Clayton Manufacturing Co.	—
Climax Molybdenum Co.	90
Columbian Steel Tank Co.	—
Continental Oil Co.	—
The Continental Supply Co.	37 and 39
Fred E. Cooper Co.	—
The Cooper-Bessemer Corp.	—
Crane Co.	—
Cummins Engine Co.	—
W. H. Curtin Co.	—
Darling Valve & Manufacturing Co.	—
The Dayton Rubber Mfg. Co.	—
DeWitt Operated Hotels	—
Diamond Chain & Manufacturing Co.	—
W. S. Dickey Clay Manufacturing Co.	—
Dixon Valve & Coupling Co.	—
Dodge Manufacturing Co.	—
Dowell Incorporated	—
E. I. du Pont de Nemours & Co.	—
Eastman Oil Well Survey Co.	—
Economy Electric Lantern Co.	—
Elliott Core Drilling Co.	—
Emsco Derrick & Equipment Co.	—
Eureka Tool Co.	—
The Fafnir Bearing Co.	—
First National Bank, Houston	—
First National Bank & Trust Co. of Tulsa	—
Edwin H. Fitler Co.	—
Fluid Packed Pump Company	—
Foote Bros. Gear & Machine Corp.	—
The Fort Worth Laboratories	89
The Benjamin Franklin Hotel	—
Franks Manufacturing Corp.	—
Frick-Reid Supply Corp.	—
Gardner-Denver Co.	—
The Garlock Packing Co.	—
Gas Lift Corp.	—
Gaso Pump & Burner Manufacturing Co.	—
General Electric Co.	—
General Power Co.	—
Geological Scientific Service Co.	88
Geophysical Service, Inc.	—
Globe Oil Tools Co.	—
The B. F. Goodrich Co.	—
Goodyear Tire & Rubber Co.	—
H. P. Gott Manufacturing Co.	97
Grant Oil Tool Co.	—
Gray Tool Co.	—
Green Head Bit & Supply Co.	—
The Guiberson Corp.	—
Gulf Coast Machine & Supply Co.	—
Gulf Envelope Co.	89
Gulf Publishing Co.	84 and 93
Gulf States Utilities	—
Gustin-Bacon Co.	47
Halliburton Oil Well Cementing Co.	—
Hardway & Cathey	89
Harrisburg Steel Corp.	—
Harnischfeger Corp.	—
Haynes Stellite Co.	—
Hazard Wire Rope Co.	—
C. M. Heeter, Sons & Co.	88
Hercules Motors Corp.	—
The Hercules Power Co.	—
Hewitt Rubber Corp.	—
Hinderliter Tool Co.	—
Hoard Exploration Co.	89
The Chas. N. Hough Manufacturing Co.	—
Houston Ready-Cut House Co.	—
Hughes Tool Co.	Fourth Cover
Humble Oil & Refining Co.	—
Hunt Tool Co.	—
Hyatt Bearings Division	—
Hydrauger Corp.	—
Independent Exploration Co.	—
The Inferno Co.	—
Ingersoll-Rand Co.	—
International Derrick & Equipment Co.	—
International Harvester Co.	—
The International Nickel Co.	21
International Petroleum Exposition	—
International Supply Co.	—
Byron Jackson Co.	—
Jarecki Manufacturing Co.	—
Jeffrey Manufacturing Co.	—
Jensen Brothers Manufacturing Co.	87
Johns-Manville	—
M. O. Johnston Oil Field Service Corp.	—
The S. M. Jones Co.	—
Jones & Laughlin Steel Corp.	—
J. & S. Carburetor Co.	89
The Kennedy Valve Manufacturing Co.	—
Kerotest Manufacturing Co.	33
Kesler Manufacturing Co.	—
Kibele Manufacturing Co.	—
Kinzbach Tool Co.	—
Koppers Co.	—
Landis Machine Co.	—
Lane-Wells Co.	—
Larkin Packer Co.	Third Cover
The Layne & Bowler Co.	—
LeRoi Co.	—
A. Leschen & Sons Rope Co.	—
The Lincoln Electric Co.	—
Link Belt Co.	—
Lone Star Cement Corp.	31
Lucey Boiler & Manufacturing Co.	—
Neal Lucey Co.	—
Ludlow Valve Manufacturing Co.	—
Lufkin Foundry & Machine Co.	—
MacClatchie Manufacturing Co.	—
MacWhyte Co.	—
D. C. Mair Machinery Corp.	—
Maloney Tank Manufacturing Co.	—
Manhattan Rubber Division	—
F. G. Masquelette & Co.	—
Martin-Decker Corp.	—
Hotel McAlpin	93
The Medart Co.	—
Metric Metal Works	—
Merla Tool Co.	—
Metric Metal oWrks	—
Midco Bailer Co.	—
Miller Sand Pump Co.	—
Mission Manufacturing Co.	50
Lee C. Moore & Co.	—
Morse Chain Co.	35
M & V Tank Co.	—
U. C. Murcell, Inc.	7
Murray Rubber Co.	—
National Bank of Tulsa	—
The National Supply Co.	25
National Tube Co.	—
Naylor Pipe Co.	—
The New Deal Specialty Co.	—
Norvell-Wilder Supply Co.	—
Walter O'Bannon Co.	—
O.C.S. Manufacturing Co.	—
Oil Center Tool Co.	—
Oil City Brass Works	—
Oil Well Supply Co.	29
Osage Metal Co.	—
Otis Pressure Control, Inc.	—
Page Steel & Wire Division	—
The Parkersburg Rig & Reel Co.	8
Patterson-Ballagh Corp.	—
Pelican Well Tool & Supply Co.	78
Pennington Signaling Core Barrel Co.	41
Petroleum Electric Power Club	61
Petroleum Iron Works Company of Texas	65
Petroleum Rectifying Co. of California	—
Petty Geophysical Engineering Co.	—
Hotel Philadelphian	89
Pittsburgh Equitable Meter Co.	First Cover
Pittsburgh Steel Co.	—
Plowden Supply Co.	—
Preformed Wire Rope	—
R-F Electrical Manufacturing Co.	—
Reading-Pratt & Cady Co.	27
Rector Well Equipment Co.	—
Reda Pump Co.	—
Reed Roller Bit Co.	42-43
The Republic Rubber Co.	—
Republic Steel Corp.	—
The Rice Hotel	—
Rieber Laboratories	—
The Ridge Tool Co.	—
Rollway Bearing Co.	—
Royal Manufacturing Co.	—
Ryder Scott Co.	—
Jack A. Schley	89
Schlumberger Well Surveying Corp.	—
Security Engineering Co.	—
Seismograph Service Corp.	—
Shaffer Tool Works	—
Shell	—
Sinclair Refining Co.	—
SKF Industries, Inc.	—
A. O. Smith Corp.	—
E. M. Smith Co.	—
Howard Smith Co.	—
South Chester Tube Co.	—
Southern Engine & Pump Co.	—
Southern Pacific Lines	—
Spang & Co.	—
Spang, Chalfant, Inc.	—
Sperry-Sun Well Surveying Co.	79
Standard Brake Lining Co.	95
Standard Pressed Steel Co.	93
Stanley Tools	—
Star Drilling Machine Co.	—
Sterling Engine Co.	—
Stevens Hotel	—
Sullivan Machinery Co.	—
Templeton, Kenly & Co.	95
Texaco Development Corp.	—
Texas Electric Service Co.	—
Texas Electric Steel Casting Co.	—
Texas Iron Works	—
Texas Steel Co.	—
Thermoid Rubber Co.	—
Thornhill-Craver Co.	—
Thornton Tandem Co.	—
The Timken Roller Bearing Co.	19
The Titusville Iron Works Co.	—
Tretolite Co.	—
Trimont Manufacturing Co.	—
Trinity Portland Cement Co.	—
Twin Disc Clutch Co.	—
Union Carbide & Carbon Corp.	—
Union Wire Rope Co.	—
Unit Rig & Equipment Co.	—
United Gas System	—
United States Rubber Co.	—
United States Steel Corp.	29
United Supply & Manufacturing Co.	—
Universal Atlas Cement Co.	—
Wailes Dove-Hermiston Corp.	—
Warner & Swasey Co.	45
The Watson-Stillman Co.	87
Waukesha Motor Co.	—
Westinghouse Electric & Mfg. Co.	—
Wheeling Steel Corp.	—
The Wheland Co.	—
Wickwire Spencer Steel Co.	—
J. H. Williams & Co.	—
K. R. Wilson	92
Wilson Manufacturing Co.	—
Wilson Supply Co.	54
W-K-M Co.	—
The Wood Shovel & Tool Co.	—
Worthington Pump & Machinery Corp.	—
Young Engine Corp.	—
Young Radiator Corp.	—
Youngstown Sheet & Tube Co.	—
Zingery Oil Map Co.	89